



Eco Mark News

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The “Eco Mark News” has been published since June 14, 1996 by Eco mark Office in response to a revision of the General Procedures for the Eco Mark Program”. In this “Eco Mark News”, the information related to Eco Mark Program such as newly selected Eco Mark product category and proposals for certification criteria is provided on the basis of the “General Procedures for the Eco Mark Program”.

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Proposals for New Eco Mark Product Categories

This topic was discussed at the Eco Mark Committee for Establishing Category and Criteria (chaired by Takashi Gunjima, Professor at Department of Economics, Doshisha University) in the Japan Environment Association Eco Mark Office on August 19, 1999 (the first committee meeting). Any new category was not added at this meeting. The conclusions of the meeting are summarized below:

- (1) Two proposals were carried over to the next meeting: “textiles fabricated by ink-jet dying systems” and “glass bottles made of waste glass (cullet) at a high ratio”.
- (2) Proposals to be studied at reviewing the current product category criteria: 16 proposals
- (3) Proposals which were not adopted, excluding the above: 43 proposals

Establishment of Criteria for Eco Mark Certification for Revised Product Categories

The Criteria for Eco Mark Certification for Revised Product Categories published as criteria for “Wooden Products Using Waste Wood, Thinned-out Wood, Small-diameter Logs, etc.” (draft) and

criteria for "Water-saving Equipment" (draft) in Eco Mark News No. 11 (April 2 1999) were modified. These modifications, reflecting various opinions sent to the committee after the publication, were examined at the Eco Mark Committee for Establishing Category and Criteria (the first meeting). As a result, the drafts were approved and were published by the Eco Mark Office as new criteria dated September 1.

"No. 12 Products Made from Used Lumber", "No. 50 Wooden Products Made of Culled Logs and Small-Diameter Logs", "No. 60 Buffer Materials Made of Culled Logs and Used Timber", and "No. 28 Flow-Reducing Valves and Water-Saving Faucets" were abolished on the same day.

- (1) "Wooden Products Using Waste Wood, Thinned-out Wood, Small-diameter Logs, etc." as shown in Annex 1
- (2) "Water-saving Equipment" as shown in Annex 2

It was determined at the meeting the screening of the drafts of revised Eco Mark product categories "Plastics Products Using Recycled Materials" (draft for publication) and "Copying Machines" (draft for publication) should be carried over to the next committee meeting (scheduled for November 4, 1999). These drafts had been scheduled for publishing on September 1, 1999 according to the Eco Mark News No. 12 (April 30, 1999).

Partial Amendment of Product Category Certification Criteria

(1) Product categories established before the amendment of the 1996 General Procedures for the Eco Mark Program

With regard to Eco Mark product categories of "No. 26 Products Using Solar Battery Modules", "No. 30 Blast Furnace Fine Powder Slag and Blast Furnace Cement", "No. 37 Drainage Fixtures for Rainwater Dissipation" and "No. 44 Unbleached Clothes, Bed Linen, and Towels", there have been some deviations in certification criteria items, including quality, from actual status. Such deviations have been caused in connection with revisions of JIS and other standards.

These problems were taken up by the Eco Mark Committee for Establishing Category and Criteria (the first meeting) and proposed drafts were approved. The Eco Mark Office published revisions dated September 1, 1999.

Major problems and reasons for revisions:

- No. 26: Present criteria (1) and (4) cover only crystalline substances. Added was JIS C 8939 to cover non-crystalline substances.
- No. 30: Standard Specification of Japan Society of Civil Engineers "Concrete Blast Furnace Slag Powder" were deleted. This was changed to "Japanese Industrial Standard JIS A 6206".
- No. 37: At present, The Building Center of Japan is not technically evaluating established the subject facilities. As an alternative, revisions were made to: "subject to technical evaluation by Association for Rainwater Storage and Infiltration Technology. Association for Rainwater Storage and Infiltration Technology" or "subject to technical examination for civil engineering technology by Public Works Research Center" or "subject to technical evaluation based on the Construction Technology Evaluation Rules by Japan Institute of Construction Engineering."

No. 44: Limiting (2) only to Fiber Products Japan Textile Products Quality and Technology Center may be unfair. Added were two other organizations: Japan Synthetic Textile Inspection Institute Foundation and Japan Spinners Inspecting Foundation.

(2) Partial Amendment of Eco Mark Product Category No. 112 "Paper Stationary" (enacted after the revision of 1996 General Procedures for the Eco Mark Program).

Received were opinions that Eco Mark Product Category No. 112 "Paper Stationary" should be reviewed because standard-size Paper for "Shodo" of brightness of 70% and less according to certification criterion 4-1 (4) is for special uses and are not suitable for the majority of users; this paper is sometimes used as wrapping paper for gift of money. This matter was discussed at the Eco Mark Committee for Product Certification (the third meeting) and Eco Mark Committee for Establishing Category and Criteria (the first meeting). As a result, the following revision was approved and published by Eco Mark Office on September 1, 1999.

Revision

4-1. Criteria for environment

(4) Non-painted paper or cardboard used for products shall be of about 70% or less in brightness. However, this requirement may not apply to 「"drawing paper", "congratulatory or consolatory envelops and wrapping paper for gift of money", "folded red and white paper" and "Paper for "Shodo""」 according to "Japanese Standard Product Classification."

Indication of Eco Mark Environmental Information

Phrases described under the Eco Mark used to be made up of simple words as "Midori wo mamoru (Conserving the green)" and "Shizen ni kaesu (Returning to nature)." Now the phrases may indicate environmental information (only criteria expressed in the certification criteria). For details, please refer to Annex 3: New rule of phrasing under Eco Mark.

Wooden Products Using Waste Wood, Thinned-out Wood, Small-diameter Logs,etc.

Japan Environment Association
Eco Mark Office

1. Environmental Background

Forest over the world is decreasing, particularly in developing countries. The portion of world forest, particularly in the tropical zone, which is disappearing every year equals about 30 percent the area of the Japanese territory. In comparison with other countries, Japan is rich with forest, which occupies 67 percent of the territory. Artificial forest equals in area 41 percent of the whole forest area, whereas in accumulation it equals about 54 percent of the whole forest, exceeding natural forest.

In artificial forest, trees are cut down by thinning out, which is done when trees have grown and become competing among themselves, in order to control the shape quality and growth of trees in a desirable range, by reducing the competition.

Thinning out is important for implementing forest management, including forest maintenance based on natural renewal, multi-layer afforestation, etc. While large-diameter logs are valued, small-diameter ones are less valued because of their low prices and limited usage and most of them are left as cut down after thinning out. Under such situation, effective utilization of small-diameter logs is important for maintaining and improving forest through activated forest management. Treetop small-diameter parts of large trees are also being used ineffectively. Cut down trees should be utilized completely, from top to root.

According to the FY1997 Forestry White Paper, 93 percent of wood industry's waste (mainly from the lumbering industry) was utilized effectively; however, as much as 800 tons (FY1994) of disassembled architectural wood and packaging wood are disposed of as waste, with a reuse rate of 36 percent. It is important that wood, once uses, should be used again effectively.

Wooden products do not consume much energy when they are manufactured and contribute to carbon storage and to reducing energy consumption. Effective utilization of wood, as a material of small environmental load, should be promoted today when the prevention of global warming has become an internationally crucial issue. In addition, forest conservation will be effective in terms of CO₂ absorption, ecosystem conservation, water resource recharge, and life environment conservation, and also for recreation and other cultural aspects.

It has been scientifically confirmed that wooden products have educational effects because they look and touch soft and emotional. However, some products give the fear of negatively affecting people's health with, for example, formaldehyde released indoors from adhesives.

The possibility of sustainable forestry management for conserving the ecosystem is now being discussed at various international conferences, and also a third-party recognition system is being built up. However, a domestic and international consensus has not been achieved yet to such an extent that requirements for Eco-mark recognition can be established.

In these circumstances, this category handles wooden products which incorporate considerations for environmental conservation throughout their entire life cycle. Such considerations should cover discharge of hazardous materials, product manufacturing processes, disposal, and recycling, and also effective use of material wood, utilization of thinned-out wood and small-diameter logs.

2. Applicable Products

A. Outdoor equipment

Civil-engineering and architectural commodities (used as materials)

Civil-engineering and architectural commodities (used as members or for final usage)

Tree-planting and gardening commodities

Exterior commodities

B. Playground and sports equipment (indoor/outdoor)

C. Furniture

D. Living and cultural commodities

E. Indoor commodities

Interior materials (used as materials)

Interior materials (used as members or for final usage)

F. Packaging materials

G. Charcoal (including moisture conditioning materials and water purifying materials)

H. Soil conditioners

I. Activated carbon (including moisture conditioning materials and water purifying materials)

Note: Those whose product category is defined as functions, such as Eco Mark Product Category No. 111 “Boards using wood, etc.”, are handled under that category.

3. Definitions of Terms

- Thinned-out and small-diameter logs: thinned-out and small-diameter logs produced in artificial forest, smaller than 14 cm in diameter
- Waste wood: used wood and woody materials (e.g. used packaging materials), waste materials from lumbering mills (chips from lumbering mills)
- Disassembled architectural wood: wood and woody materials produced from disassembled buildings
- Rarely utilized wood: waste wood from forest, wood and woody materials such as shrubs,

including bark

- Recycle: material recycle, not including thermal recycle and others.

4. Criteria for Eco Mark Certification

4.1 Environmental criteria

- (1) For woody portion, the total of thinned-out wood, small-diameter logs, waste wood, disassembled architectural wood, and rarely utilized wood shall be 100 percent (in weight)

Note: Percentage refers to weight percentage of a material or a product in a constant state at temperature of 20 +/- 3 °C and a humidity of 65%.

- (2) A product combining thinned-out wood, small-diameter logs, waste wood, disassembled architectural wood, and rarely utilized wood shall have woody portion of not less than 70 percent (weight) of the whole product, including added materials.
- (3) A product of packaging materials (F), charcoal (G), soil conditioners (H), and activated carbon (I) listed in Section 2 "Applicable Products" above, which uses waste wood, shall not use disassembled architectural materials. However, activated carbon (I) to be used for blowing incinerators are exempted.

A product using disassembled architectural materials (including activated carbon (I) to be used for blowing incinerators) shall have been subjected to raw material source-sorting as mentioned below:

- No toxic gases such as sulfur oxides shall be emitted at incineration.
 - No hazardous heavy metals such as chromium, cadmium and arsenic shall be contained.
- (4) Commodities shall not cause increase of waste (so-called "disposable" commodities). However, if a system has been established for the recovery and material recycle of used commodities, and material recycle is actually performed, this requirement may not be applied.
 - (5) Products shall not use ant-resisting agent, insect-proofing agent, anti-septic agent, and flame-retardant agent. For outdoor equipment out of outdoor equipment (A) and outdoor playground and sports equipment (B) listed in Section 2 "Applicable Products" above, and also products listed in Attachment 1 out of indoor equipment (E), however, ant-resisting agent, insect-proofing agent, and anti-septic agent may be used. Ant-resisting agent, insect-proofing agent, and anti-septic agent shall have been approved by Japan Wood Preservation Association. No agents containing chromium or arsenic as well as pyresroid-based agents shall be used. (It shall be avoided to employ reused wood or new wood containing these substances.)
 - (6) No residual toluene and xylem shall exist indoor equipment out of playground and sports equipment (B), in furniture (C), in living and cultural commodities (D), and in indoor commodities (E), at the time of shipment of the commodities.

- (7) Indoor equipment out of playground and sports equipment (B), and also furniture (C), living and cultural commodities (D), and indoor commodities (E), shall meet the requirements of 88/378/EEC EN71-3.
- (8) Indoor equipment out of playground and sports equipment (B), and also furniture (C), living and cultural commodities (D), and indoor commodities (E) shall not discharge more than 0.5 mg/liter of formaldehyde from the material.
- (9) Reducing load on incineration at burning of the product shall be considered (surface coating with halogen-group elements.)
- (10) In manufacturing the commodities, environmental laws and regulations, and agreements concerning air pollution, water pollution, noise, offensive odor, discharge of hazardous substances, and other factors shall be followed.
- (11) In manufacturing the commodities, energy saving efforts are made.
- (12) Resource saving, easiness for recycling, and decrease of load on incineration are taken into consideration in packaging.

4.2 Quality criteria

- (1) Quality requirements of Japanese Industrial Standards, Japanese Agricultural and Forestry Standards, and other equivalent standards are met.
- (2) Charcoal and formed charcoal shall be 6,800 kcal/kg in calorific value, not more than 4 percent in ash content, not more than 25 percent in volatiles, and not less than 71 percent in fixed carbon.
- (3) Activated carbon shall have abilities of 30% and more in benzene adsorption, 900 mg/g and more in iodine adsorption, and 150 cc/g and more in methyl blue decoloring. Powder activated carbon shall be 25 and less in phenol value and 50 and less in ABS value, and also shall have abilities of 950 mg/g and more in iodine adsorption and 150 ml/g and more in methyl blue decoloring.

5. Certifying Conformity to Criteria

- (1) Data certifying the conformity to individual criteria shall be attached to the application.
- (2) For Criteria 4-1 (1), documents issued by the raw-material producers certifying that the raw materials are thinned-out wood, small-diameter logs, waste wood, disassembled architectural wood, or rarely utilized wood shall be submitted. If 11 or more raw-materials producers are involved, the list of raw-materials producers and certificates issued by the first through 10th producers shall be submitted. For thinned-out materials, the certificate of origin, forest management plan, and information about the kind of tree shall be submitted.
- (3) For Criteria 4-1 (2), the applicant shall describe the product total weight and the weight of woody portion, weight of non-woody portion, and the weight percentage of the woody portion and non-woody portion. It shall be certified that the woody portion is not less

than 70 percent. The weight of pencil lead, surface coating, and functionally necessary consumable members shall be reduced from the total weight.

- (4) For Criteria 4-1 (3), it shall be certified that disassembled architectural wood has been subjected to source-sorting from waste wood or no disassembled architectural wood is used.
- (5) For Criteria 4-1 (4), the usage of the commodity shall be specifically described in the "Application for Eco Mark Certification, Form 2." If a system for recovering waste and material recycling has been established, written explanation thereof shall be submitted.
- (6) For Criteria 4-1 (5), use of ant-resisting agent, insect-proofing agent, anti-septic agent, or flame-retardant agent shall be specifically described in the "Application for Eco Mark Certification, Form 2." If anti-septic agent or the like is used, it shall be evidenced in writing that the agent and the use of the agent have been approved by the Japan Wood Preservation Association.
- (7) For Criteria 4-1 (7), the results of testing carried out by a third party or a public party shall be certified.
- (8) For Criteria 4-1 (8), the results of testing according to JIS shall be submitted. The method of testing shall be in accordance with JIS A 5908 5.9 for formaldehyde release testing (acceptable if JAS is revised).
- (9) For Criteria 4-1 (10), a self-certificate shall be issued by the manager of the factory, stating that the factory has been observing the environmental regulations and other requirements of the area where it is located, at least for five years before submitting the application
- (10) For Criteria 4-1 (11), energy consumed for the production of the product shall be submitted in KJ/m³, kW/m³, kJ/t, kW/t, kJ/product, kW/product or in kg-C/m³. Energy consumption shall be calculated from accepting raw materials at the production plant. Brief description of the production process shall be submitted. Actual energy consumption data (CO₂ emission) shall be submitted at renewing a contract.
- (11) For Criteria 4-1 (12), the packaging style (packaging conditions, materials, etc.) shall be specifically described.
- (12) For Criteria 4-2 (1), test results according to JIS or other standards shall be submitted.

6. Other Requirements

- (1) Commodity classification shall be by usage and brand name. Classification by size and color is not made.
- (2) For commodities using thinned-out wood and small-diameter logs as raw material of the woody portion, the lowest lines of the mark shall indicate: 'Kanbatsuzai syoukeizai no riyou(Thinned-out wood and small-diameter logs used)' or 'Kanbatsuzai syoukeizai no riyou xx%(Thinned-out wood and small-diameter logs used xx%)' For commodities using waste wood, disassembled architectural wood, and hardly used wood as raw

material of the woody portion, the lowest lines of the mark shall indicate: "Ki no risaikuru(Wood recycled)" or "Ki no risaikuru xx%(Wood recycled xx%)". As xx% shall be indicated the weight ratio of thinned-out wood and small-diameter logs, waste wood, disassembled architectural wood, and rarely used wood (the same figures as the weight rates of 4-1 (2)).

- (3) To supplement the lowest lines of the mark, the possibility of indicating the environmental information may be provided. In this case, three-line marking, centered, shall be placed in a square as illustrated below.



| | |
|---|------------------------------|
| Thinned-out wood/small diameter wood used xx% | (or waste recycled xx%) |
| Formaldehyde: xxppm | |
| Anti-septic agent: not used | (name of the agent, if used) |

Attachment 1 Application of ant-resisting agent, anti-septic agent, and insect-proofing agent

- a. Base (including butt end, tenon, and mortice)
- b. Column, intermediate column (including butt end and mortice), brace (including plywood used in place of brace), part of backing within one meter from the ground). Indoor face side of column is to be excluded.

Enactment : September 1, 1999

These recognition criteria for the commodity category will be reviewed in five years after the date of enactment, and the recognition criteria and/or the commodity category will be revised or removed.

**Product Certification Criteria for
“Wooden Products Using Waste Wood, Thinned-out Wood,
Small-diameter Logs, etc.”**

September 1, 1999

1. Supplement to Environmental Background

Forest over the world equals 3.5 billion hectares (1997 Forest White Paper), occupying 27 percent of the total land area. While forest is increasing slightly in developed countries, it is decreasing in developing countries. Particularly, in the topical zone, 12.6 million hectare forest, which equals about 30 percent of the total land area of Japan, is disappearing every year. It is important to reduce natural-forest utilization by afforestation and other means.

Forest in Japan occupies 25.15 million hectares (accumulation 3.48 billion cubic meters), equaling 67 percent of the land area (forest rate). Out of the total forest, artificial forest, 10.4 million hectares, occupies 41 percent of the total forest in area, whereas its accumulation, 1,900 million cubic meters, occupies 54 percent. Natural forest equals 13.38 million hectares in area, and 1,590 million in accumulation. According to Food and Agriculture Organization (FAO) of the UNA, the forest rates are 23 percent in the United States, 27 percent in Canada, 45 percent in Russia (37 percent in the former USSR), about 10 percent in the United Kingdom, and about 14 percent in China.

Concerning thinning out, thinned out area is as small as 2.1 million hectares in recent years; thinning out is delaying in many regions. Out of trees which are cut down for thinning, wood in 1,930 thousand cubic meters is transported and utilized, with a utilization rate of 43 percent. The uses of thinned out wood are: 68 percent as raw wood for lumbering, 17 percent as logs, and 15 percent as raw materials such as chips. It is our challenge to promote effective utilization of these precious resources, while contributing to the improvement of forest conditions.

The recent domestic demand/supply of wood equals 110 million cubic meters per year (average of 1995-1997 was 111.39 million cubic meters). Waste wood of 17.27 million cubic meters (1996) is discharged from lumbering mills. Such waste wood is effectively used as chips (for pulp and boards) and fuels. Disassembled architectural wood equals theoretically about 85 percent of wood used for new buildings because about 15 percent of wood is wasted in constructing new buildings. Disassembled architectural wood is estimated to be 3 to 4.3 million cubic meters (1.5 to 2.15 million tons). When new

buildings are constructed, waste wood of 4 million cubic meters is discharged a year. Used packaging wood is also utilized.

Various effect of forest conservation efforts would include: preventing mountain disasters (preventing soil and sand collapse, preventing soil washout, preventing erosion, etc.), recharging water resources (reducing drought, preventing flood, purifying water quality), preserving life environment (supplying oxygen, moderating temperature, maintaining humidity, preventing wind damage, preventing fire spread, etc.), health and cultural functions (places for recreation, places for welfare, places for artificial imagination, places for education, protecting wildlife, preserving life environment for fish, preserving hereditary resources), and so on.

Forest accumulation in Japan is increasing by about 100 million cubit meters a year. While trees in about 30 million cubic meters are cut, wood in about 70 million cubic meters is increasing a year mainly in artificial forest. (Wood increased by 350 million cubic meters during the five years from 1990 to 1995.)

2. Applicable Products

Outdoor and indoor equipment is defined as follows. Outdoor equipment is part of architecture that is located outdoors or in the outdoor conditions. Indoor equipment is part of architecture that is in conditions controlled differently from outdoor air. Ceiling and space under the roof are considered to be indoor. Where one wall material (single layer) separates outdoor and indoor, the wall is considered to be indoor. Wood plastic combination (WPC) is different in fundamental characters, so it is out of this category.

3. Certification Criteria

3.1 Details of Establishing Environmental Criteria

For setting up the criteria, environmental load over the whole life cycle of a commodity was considered, using a life stage environmental load items selection table. As a result, load items which are considered to be important for establishing environmental criteria were selected in view of environmental loads over the whole life cycle of the commodity. For these items, qualitative or quantitative criteria are to be considered.

Environment load items considered for the category of "Wooden Products Using Waste Wood, Thinned-out Wood, Small-diameter Logs, etc." are as shown in the life stage

environmental load items selection table (marked with and in the table). Out of these items were finally selected as the environment-related criteria: A-1, A-8, B-2, B-5, B-6, B-8, B-9, C-1, C-8, D-5, D-7, D-8, and E-8 (in the table).

The columns with in the table show items which were out of the scope of review or which were reviewed in combination with other items.

Life stage environmental load items selection table

| Items Damaging to the Environment | Life Cycle of Products | | | | | |
|---|--------------------------|------------------|-------------------|-----------------------|---------------|--------------|
| | A Resource Extraction | B Manufacture | C Distribution | D Use& Consumption | E Disposal | F Recycle |
| 1. Consumption of Resources | | | | | | |
| 2. Emission of Greenhouse Gases | | | | | | |
| 3. Emission of Ozone Layer Depletive Substances | | | | | | |
| 4. Destruction of the Eco System | | | | | | |
| 5. Exhaust of Air Pollutants | | | | | | |
| 6. Emission of Water Contaminants | | | | | | |
| 7. Emission/Disposal of Wastes | | | | | | |
| 8. Use/Emission of Toxic Substances | | | | | | |
| 9. Other Environmental Impacts | | | | | | |

A. Resource extraction stage

A-1 Consumption of resources

The following points were studied under this item:

- (1) Use of thinned-out wood, small-diameter logs, waste wood, disassembled architectural wood, and rarely utilized wood as raw materials
- (2) Use of non-wood materials
- (3) Sustainable forestry management in cutting wood and producing chips
- (4) Mixture of wood and non-wood materials

Concerning (1), it is desirable to use by 100% thinned-out wood, small-diameter logs, waste wood, disassembled architectural wood, and rarely utilized wood as raw materials for products, from the viewpoint of contributing to forest conservation through effective

utilization of wood, utilization of non-utilized resources, and reuse of wood. Consequently, this item has been selected as an item for which criteria should be established.

It is possible that such materials as soil conditioners emit heavy metals into the natural environment. Packaging materials are reused as a raw material for boards used in furniture. Therefore it has been concluded that disassembled architectural wood should not be used. Concerning other commodities in which waste wood is used as raw materials, disassembled architectural wood that may probably contain heavy metals should be subjected to resource sorting. This requirement has been selected as one of the criteria.

Concerning (2), use of non-wood in "recycled waste wood" was not recognized, but use up to 20 percent was recognized in "wooden products using thinned-out wood and small-diameter logs." Although use of single material as a product may reduce the environmental load, this offers less possibility if durability and feeling are considered. This has been selected as an item for which criteria should be set up, provided that the use of non-wood materials, such as nails and metal fixtures, should be allowed to a certain extent.

Concerning (3), since thinned-out wood and small-diameter logs from artificial forest, and other wood that compose forest are considered, such factors as tree cutting, planting, and management should be checked up. Since this item is being examined at various international conferences, it has been concluded that only the situation should be described as a part of the environmental background, and the requirements for application should include only submission of the certificate of origin and some other documents.

It is promoted to plant and clearly cut quickly growing trees to produce wood mainly for raw-material chips. Since the objectives of this category are "forest conservation" (biodiversity conservation in particular) and "effective use of non-utilized resources", such small-diameter logs are not suitable for these objectives. Furthermore, there exist such questions in terms of environmental conservation as soil wash-out caused by clear cutting and decrease in ground force with single tree species. Therefore (3) has been excluded.

Concerning (4), the possibility of using powdered wood mixed with plastics is considered. Since these materials are different in some characters from wood, it has been concluded that (4) should not be handled in this category, from the viewpoint of their material-recycle processing, energy consumption, etc.

A-2 Emission of greenhouse gases

The following point was studied under this item:

- (1) CO₂ emission, in connection with evaluation of CO₂ absorption by woody resources and energy consumption at collecting raw materials

Widely applicable methods for evaluating CO₂ absorption (carbon fixed in whole forest), which is characteristic of wood resources, has not been established yet. Consequently this item has not been selected as an item for which criteria should be set up.

A-8 Use /emission of toxic substances

The following point was studied under this item:

- (1) Use and inclusion of hazardous substances

Commodities to be studied under this category have the possibility of involving insect-proofing or anti-septic treatment, depending on the situation how waste wood, disassembled architectural wood or rarely utilized wood was used before they became raw materials. CCA and PCP were particularly examined treatment agents.

Concerning quickly growing planted trees, hazardous substances may remain because insect-proofing agent may have been applied. It is still impossible to select such wood completely and it is not clear to what extent environment polluting substances may accumulate.

Concerning disassembled architectural wood, the revised "Guideline for Promoting Proper Processing of Architectural Byproducts" requires collection of separated CCA waste at building disassembling sites. In order to promote effective utilization of waste wood, it has been concluded to include this item into this category on condition that CCA-applied wood has been separated from raw materials and that emission of heavy metals and hazardous gases is checked, although this may be difficult presently. However, use of soil conditioners, which may possibly be released into the environment, is not permitted. For other commodities, notes on raw materials are described in the parentheses under 4-1 (5).

B. Manufacture stage

B-2 Emission of greenhouse gases

The following point was studied under this item:

- (1) CO₂ emission, in connection with evaluation of CO₂ fixing by woody materials and energy consumption at production

It has been concluded to include the item in this category as an energy consumption reporting item, in order to enhance people's awareness of the needs for reducing energy consumption, considering that wooden products do not consume much energy.

B-5 Exhaust of air pollutants

The following points were studied under this item:

- (1) Emission of NOx, SOx, etc. at production (installation of preventing equipment at each plant)
(2) Emission of air polluting substances from adhesive

Concerning air-polluting substances emitted from product manufacturing processes, it has been concluded to include the item into this category because the observance of related environmental laws and agreements will contribute to reducing environmental load.

B-6 Emission of water contaminants

The following points were studied under this item:

- (2) Emission of water-polluting substances from production processes

Concerning water polluting substances emitted from product manufacturing processes, it has been concluded to include the item into this category because the observance of related environmental laws and agreements will contribute to reducing environmental load.

B-8 Use/emission of toxic substances

The following points were studied under this item:

- (1) Suppression of formaldehyde emitted from manufacturing processes (management according to environmental criteria and measures for reduction)
- (2) Use and emission of hazardous substance with adhesives
- (3) Use of ant-resisting agent and anti-septic agent (e.g. CCA)

Concerning (1) and (2), explanation is given under B-5. This item has been selected as an item for which criteria should be set up.

Concerning (3), some products contain anti-septic agent added to ensure increased durability; anti-septic processing may extend the life of wood which is useful in view of CO₂ absorption and other environmental effect. However, some anti-septic agents are hazardous with heavy metals, so the possibility of not adding wood preservatives such as CCA in production was studied.

As a result, it has been concluded to limit indoor use to under-floor use only. However, the item has been selected as an item for which criteria should be set up, because use of anti-septic agent is sometimes necessary for maintaining outdoor commodity functions. Nevertheless, the exemption is not applied to those which contain anti-septic agent as a natural component, such as a component contained in Japanese cypress.

Along with using chemicals, it is also effective to use anti-septic and ant-resisting wood, such as Japanese cypress. Pyresroid-based chemical agents, as a main content of antisepsics for pressure injection, are doubtful with respect to extrinsic endocrine disrupter (environmental hormone), according to Japan Wood Preservation Association. Although the use of such chemicals as an anti-septic agent does not provide any problem because no volatilization or contact exists, it has been concluded that these agents should be excluded. This is based on the existing knowledge mentioned above and on consumers' keen concern. This matter should be reviewed later when some other knowledge appears to clear the currently existing doubt.

B-9 Other environmental impacts

The following point was studied under this item:

- (1) Dust generated at production (installation of preventing facilities at each plant)

It has been concluded to set us criteria for this item because environmental loads can be

reduced by the observance of related environmental laws and agreements, which means work environment is well controlled.

C. Distribution stage

C-1 Consumption of resources

The following point was studied under this item:

(1) Packaging style

This item has been selected as an item for which criteria should be set up because it has been concluded that paying attention to saving resources, facilitating material recycle, and reducing the load at incineration are important for decreasing environmental load.

C-2 Emission of greenhouse gases

The following point was studied under this item:

(1) Quantity of CO₂ released by energy consumption during transportation of materials

This item was not selected as an item subject to criteria, because an alternative transportation method that releases less CO₂ is difficult to choose as criteria.

C-5 Exhaust of air pollutants

The following point was studied under this item:

(1) Discharge of air pollutants from transportation of materials.

This item was not selected as an item subject to criteria, because an alternative transportation method that releases less air-polluting substances is difficult to choose as criteria.

C-8 Use/emission of toxic substances

The following point was studied under this item:

(1) Formaldehyde control during material storage

This item was selected as an item subject to criteria. It has been concluded that selecting the quantity of formaldehyde emitted from the material as one of the criteria will contribute to reduce the environmental load. Judging from the spread of adhesives in which formaldehyde is minimized, maximum 0.5 mg/liter has been employed as a standard.

D. Use&consumption stage

D-5 Exhaust of air pollutants

The following point was studied under this item:

(1) Release of air-polluting substances from adhesive components

Concerning the release of formaldehyde in the distribution stage, it is pointed out in recent years that formaldehyde is emitted from formaldehyde-containing housing products, which causes indoor pollution. Many consumers are concerned with this issue.

Consequently it has been concluded that setting up criteria on the quantity of substances which are considered to be potentially hazardous and which are emitted from materials, will contribute to reducing the environmental load. Outdoor commodities do not offer the possibility of pollution, so they do not need criteria.

Specifically, a release level of maximum 0.5 mg/liter, which is equivalent to JIS A 5908 E0, was proposed. In view of consumers' concern with this issue and the spread of formaldehyde-reducing adhesives, 0.5 mg/liter has been employed, and this item has been selected as an item subject to setting up criteria.

Different formaldehyde measuring methods are employed in the world. The relation between measurements of materials and concentration in indoor air, and level conversion between different measuring methods have not been clarified yet. Therefore more suitable methods will be employed in the future when such methods become available. Methods for measuring emitted formaldehyde are being reviewed by Japan Agricultural Standards (JAS), and this will be incorporated as criteria whenever standardization takes place.

Although JIS focuses on fiber plates (plain plates) to measure formaldehyde, formaldehyde release as a processed product, not as a material, will be measured. The measuring method should be based on product checking and the chamber method would be suitable. However no standardization has been made under the JIS or any other organization

D-7 Emission/disposal of wastes

The following point was studied under this item:

- (1) Commodities should not increase waste.

Commodities that increase waste refer to those which are used in one-way manner. Examples include disposable chop sticks. Soil conditioners and other commodities which can be used only once and are disposed of are exempted from this requirement.

D-8 Use/emission of toxic substances

The following points were studied under this item:

- (1) Emission of formaldehyde
(2) Emission of hazardous substances (e.g. VOC) at use or consumption

Item (1) has been selected as an item for which criteria should be established.

Concerning (2), a formaldehyde guideline was proposed at "Chemical Substances Study Subcommittee of Comfortable and Healthy Housing Study Conference" under the Ministry of Health and Welfare. Toluene and xylene were picked up as priority substances by "Healthy Housing Study Group" under the Ministry of Construction. Considering these facts, we have decided to establish criteria for these substances.

However, it has not been concluded to set up criteria for TVOC because no measuring methods has not been established and many points should be studied, although we are aware of the need for establishing Eco-Mark. VOC emission from anti-septic agents does not provide a problem because their indoor use is not permitted. For reference, "Environmental Issues Committee Report on Wooden Building Materials" reports that chemical components in preservative agents are little volatile in general. It is reported that creosote oil is a volatile component in wood preservatives.

E. Disposal stage

E-1 Consumption of resources

The following point was studied under this item:

- (1) Consumption of resources from wooden products

This item was not selected as an item for which criteria should be established, as described in F-9.

E-2 Emission of greenhouse gases

The following point was studied under this item:

- (1) Emission of global warming-affecting substances at incineration

This item was not selected as an item for which criteria should be established, as described in A-2.

E-5 Exhaust of air pollutants

The following point was studied under this item:

- (1) Emission of air-polluting substances from wooden products

This item was not selected as an item for which criteria should be established, because setting up criteria and controlling flue-gas processing at incinerators are difficult.

E-7 Emission/disposal of wastes

The following point was studied under this item:

- (1) Discharge or disposal of waste

This item was not selected as an item for which criteria should be established, because necessary criteria cannot be conceived at this moment.

E-8 Use/emission of toxic substances

The following points were studied under this item:

- (1) Environment-polluting substances accumulated in incineration gases and ash from wood containing injected ant-resisting agent, insect-proofing agent, or anti-septic agent
- (2) Consideration of reducing load at incineration

It was pointed out that environmental pollutants, such as heavy metals, may remain and generate from incineration ash. As a result of survey made by Japan Wood Preservation Association, it has been concluded that the flue gas problem should not be handled as a special issue, so criteria should not be set up.

Concerning dioxin, data are available on only some antiseptics and are not sufficient for making judgment. Chromium-based and poly-chloric chemicals, which offer the fear of dioxin, are not permitted for this category. Chromium and arsenic were selected as substances for which criteria should be established.

Concerning (2) it was established as criteria requirement that reducing the load at incineration should be considered. This means that chlorine and other halogen-group elements should not be used, except for antiseptics.

F. Recycle stage

F-9 Other environmental impacts

The following point was studied under this item:

- (1) Material Recycle

Although most wood is recovered and subjected to material recycle into raw materials for chips and pulp, some wood is disposed of as unused. It was discussed that chop sticks and other disposable commodities should be handled as out of the scope. However, it has been concluded to include into this category, subject to their recovery and material recycle.

4. Quality

Ordinary charcoal has been defined on the basis of National Fuel Association's opinion. General activated carbon has been defined on the basis of National Fuel Association's opinion and National Waterworks Association's standards.

Attached Certificates

Table 1 4-1 (1) Percentage of thinned-out wood etc. in woody portion

| No | Material certification | Place of use of thinned out wood etc. |
|--------------------------------------|-------------------------|---|
| 1 | Material certificate 1 | |
| 2 | Material certificate 2 | |
| 3 | Material certificate 3 | |
| 4 | Material certificate 4 | |
| 5 | Material certificate 5 | |
| 6 | Material certificate 6 | |
| 7 | Material certificate 7 | |
| 8 | Material certificate 8 | |
| 9 | Material certificate 9 | |
| 10 | Material certificate 10 | |
| : | : | |
| n | Material certificate n | |
| List of raw-material producers | | yes/no/less than 10 firms, not attached |
| Percentage of thinned -out wood etc. | | * % |

(Circle applicable items.)

*Percentage of thinned -out wood etc.(%)=[Total weight of (thinned-out and small-diameter wood) + (waste wood) + (disassembled architectural wood) + (rarely utilized wood)]/[Weight of woody portion] x 100

Table 2 4-1 (2) Ratio of woody portion

| No | Place of use of thinned-out wood etc. | Weight of thinned-out wood at the place of use (g) | Weight of product (g) | Ratio of woody portion to product (%) |
|-------|---------------------------------------|--|-----------------------|---------------------------------------|
| 1 | | | | - |
| 2 | | | | - |
| 3 | | | | - |
| 4 | | | | - |
| 5 | | | | - |
| : | | | | - |
| n | | | | - |
| Total | | | | * % |

*Ratio of woody portion = $\frac{\text{Total weight of thinned-out wood at the places of use (g)}}{\text{weight of product (g)}} \times 100$

Table 3 4-1 (3) Hazardous substances 1

| No | | |
|----|---|--------------|
| 1 | Object commodities | F/G/H/I/etc. |
| 2 | Use of disassembled architectural wood (only for objects F, G, and H) | yes/no |
| 3 | Emission sulfur oxides at incineration | yes/no |
| 4 | Chromium and its compounds | yes/no |
| 5 | Cadmium and its compounds | yes/no |
| 6 | Arsenic and its compounds | yes/no |

For A-E, circle "etc."

Not necessary to fill in the items hereunder if "no" in Item 2 is circled.

Table 4 4-1 (4) Commodities causing increase in waste (disposables)

| No | | |
|----|------------------------------------|--|
| 1 | Disposables | yes/no |
| 2 | Description chopsticks, pencils | Ex: disposable |
| 3 | Recovery, recycle | yes/no Description (necessary document) |

Explain what the commodity is.
For general concept, refer to
the "commentary." Not
necessary to fill in if "no" is
circled in Item 3.

Table 5 4-1 (5) Hazardous substances 2

| No | | |
|----|--|--|
| 1 | Object commodities | A/B (outdoor)/ commodity in Table 1/etc. |
| 2 | Use of antiseptics (for A,B (outdoor), only for E(Table 1)) | yes/no |
| 3 | Approval by Japan Wood Preservation Association | yes/no Conformance Certificate (necessary document) |
| 4 | Chromium and its compounds | yes/no |
| 5 | Arsenic and its compounds | yes/no |

For C-I, circle "etc." Not
necessary to fill in Item 2 and
lower ones if "etc." is circled.

Table 6 4-1 (6) Hazardous substances 3

| No | | |
|----|--------------------|-----------------------|
| 1 | Object commodities | B (indoor)/C/D/E/etc. |
| 2 | Toluene residue | yes/no |
| 3 | Xylene residue | yes/no |

For A,F-I, circle "etc." Not
necessary to fill in Item 2 and
lower ones if "etc." is circled.

Table 7 4-1 (7) Hazardous substances 4

| No | | |
|----|---------------------------------------|---|
| 1 | Object commodities | B (indoor)/C/D/E/etc. |
| 2 | Conformance with 88/378/EEC EN71-3 | yes/no Conformance certificate (necessary document) |

For A,F-I, circle "etc." Not
necessary to fill in Item 2 if "etc."
is circled.

Table 8 4-1 (8) Hazardous substances 5

| No | | |
|----|--------------------------------|---|
| 1 | Object commodities | B (indoor)/C/D/E/etc. |
| 2 | Emission of formaldehyde | mg/liter Conformance certificate (necessary document) |

For A,F-I, circle "etc." Not
necessary to fill in Item 2 if
"etc." is circled.

Table 9 4-1 (9) Use of halogen group elements

| No | | |
|----|--|--------|
| 1 | Use of halogen group elements in product (surface coating) | yes/no |

Table 10 4-1 (10) Observance of environmental regulations applicable to the plant

| No | | | |
|----|---|--------|--|
| 1 | Observance of environmental regulations applicable to the plant | yes/no | Conformance certificate (necessary document) |

Table 11-1 (This table shows an example.) 4-1 (11) Energy consumption at manufacturing the product

| No | | | |
|----|---|--------|---|
| 1 | Summary of production processes | yes/no | Summary(to be attached) |
| 2 | Heat value conversion rate used for calculation | yes/no | Indicate the factor in the column if electricity, gas or oil is used. |

Table 11-2 (This table shows an example.)

| No | | Energy value at the process | Calculation unit |
|----|--------------------------|-----------------------------|------------------|
| 1 | Process xxxxx | | |
| 2 | Process xxxxx | | |
| : | | | |
| n | Process xxxxx | | |
| | Total energy consumption | | |

Calculation unit: raw material charge (e.g. wood 1kg) per energy consumption at each process

Total energy consumption: kJ/m3, kW/m3, kJ/t, kW/t, kJ/product, kW/product or kg-C/m3

Table 12 4-1 (12) Packaging

| No | | |
|----|--|--|
| 1 | Packaging style | |
| 2 | Packaging materials used (Name of material and grade) | |

Photo or figure may be attached as supplemental data.

Table 13 4-2 (1) Quality

| No | | | |
|----|-----------------------------------|--------|--|
| 1 | Applicability of standards yes/no | yes/no | |
| 2 | Name of the standard | | |
| 3 | Conformance with the standard | yes/no | Conformance certificate (necessary document) |

Where no standards are applicable, describe conformance with similar standards.

Table 14 4-2 (2) Quality of charcoal and formed charcoal

| No | | |
|----|------------------|--------------------------|
| 1 | Object | Charcoal/formed charcoal |
| 2 | Heat value | kcal/kg |
| 3 | Ash content | % |
| 4 | Volatile content | % |
| 5 | Fixed carbon | % |

Not necessary to fill in for products other than listed here.

Table 15 4-2 (2) Quality of activated carbon

| No | | |
|----|------------------------|--|
| 1 | Object | Activated carbon/powder activated carbon |
| 2 | Benzene adsorption | % |
| 3 | Iodine adsorption | mg/g |
| 4 | Methyl blue decoloring | |
| 5 | Phenol value | |
| 6 | ABS value | |

Not necessary to fill in for products other than listed here.

For powder activated carbon, not necessary to fill in.

For activated carbon, not necessary to fill in.

For activated carbon, not necessary to fill in.

Table 16 Special processing

| No | | |
|----|--|--------|
| 1 | Special processing | yes/no |
| 2 | Indicate the name of special processing (e.g. antibacterial) if any. | |

Water-saving Equipment

Japan Environment Association
Eco Mark Office

1. Environmental Background

Water is moving among sea, air, and land in virtue of the solar thermal energy and the gravity of the earth. This global-scale natural water circulation carries heat and materials, and also raises fauna and flora, contributing to environmental conservation. On the other hand, artificial water circulation systems have been created by human beings to circulate water for our life, including taking water for water services and discharging to sewages.

Human beings are enjoying a lot of benefits for keeping our existence and supporting daily life by acting on the water circulation systems. On the other hand, we are affecting natural water circulation. Such environmental problems include unstable river water flows (urban-type flood damages, decrease of normal flows), ground subsidences due to excessive pumping up of groundwater, decrease of the self-purifying function of water, contamination of water quality, deterioration of the ecosystem, and heat island phenomena, etc.

In order to harmonization with the environment and the sustainable development of human society, we have to make efforts to improve water resources as a whole. To maintain water resources to ensure the availability of water throughout the year, it is necessary to use and care water resources.

As the construction of dams, including those at estuaries, and other development projects have been promoted, water resource utilization in Japan has reached a sufficiently high level. If we need more water resources, we must consider more advanced harmonization with nature, and wider possibilities of utilization of water resources than before; such possibilities may include multi-stage use, reuse of water, and use of rain water. Saving of water and diversification of water resources are meaningful for such a purpose that we can leave limited water resources for future generations.

This product category includes "water using equipment" which, as products (excluding systems), incorporates environmental considerations, in order to reduce the environmental impact through effective utilization of water. The purpose also includes the spread of such water using equipment and the enhancement of people's awareness of water saving.

It should be noted, however, that peoples' good awareness of water savings is most effective for effective utilization of water. Awareness of water users should be enhanced.

2. Applicable Products

This product category covers the equipment listed in Attachment 1, which meets the -marked usage in the table, selected from "Valves and Pipe Fittings", "Sanitary Equipment Components", etc. based on the Classification of Standard Goods in Japan.

3. Definitions

| | |
|--|---|
| Water tap: | general name of a valve installed on a water feed pipe |
| Volume regulating performance: | performance capable of automatically stopping water when a preset volume of water has been discharged |
| Self-closing: | construction that makes water discharge automatically stop when a person's hand has left from under the faucet |
| Flush water volume: | actual volume of water that flows at one-time flushing |
| Water-saving type water closet: | a water closet that allows flushing at 6 liters or less |
| Combination faucet (thermostat type): | combination faucet incorporating a mechanism which supplies mixture of hot water and cold water at a discharge temperature set by a temperature regulating knob, by automatically regulating the ratio of hot water and cold water even at temperature and pressure fluctuations |
| Combination faucet (single-lever type): | combination faucet which can turns water discharge on and off, and regulate the discharge rate and discharge temperature, by means of manipulating a single lever |
| Faucet with volume-regulating mechanism: | faucet which has a volume-regulating function that makes water discharge stop when a preset volume has been discharged |
| An automatic faucet: | water tap which automatically stops water discharge of water, with built-in optoelectronic sensor, solenoid valve, etc. Automatic faucets are available for hot water and cold water. |
| Self-closing faucet: | water tap which makes water stop automatically after a predetermined volume has been discharged when the operating mechanism is released |
| Water-saving top: | top designed to save water in a water tap. Water discharge from a water tap equipped with a water-saving top is significantly smaller than that from a water tap equipped with a ordinary top, at the same lever opening degree. Fixed type tops are included. |
| Flow-control valve: | control valve which can always maintain a fixed flow rate even if the inlet or outlet pressure changes. Flow-control valves are available either with a fixed flow rate or with a variable flow rate. Flow-control valves utilize the kinetic pressure of water, a spring, etc. Attention should be paid to the accuracy of constant flow and allowable pressure. |

4. Criteria for Eco Mark Certification

4-1 Environmental criteria

- (1) Regarding water-saving performance, the water-saving and structural criteria stipulated in Attachment 2 shall be met. Special requirements for locations or special conditions for water-saving effect, if any, shall be given as information.
- (2) Installation to existing equipment shall not be difficult. An operation manual shall be supplied together with the equipment. If existing equipment is modified or given additional functions, the original functions shall not be affected. It shall be clearly mentioned that, if the original equipment is negatively affected by modifying or additional equipment, the modifying or additional equipment is responsible. Applicant shall assure the responsibility for performance of the equipment.
- (3) Environmental laws and regulations, and also environment protecting agreements on air pollution, water contamination, noise, smells, and toxic substances, shall be following in manufacturing the equipment.
- (4) Emission of toxic substances shall be subject to Article 4 Government ordinance of Water Work Law "Standard for structure of domestic water supply equipment".
- (5) Parts which are replaceable shall be able to be installed and removed by normal household tools.
- (6) Supply of spare parts shall be secured for 10 years or more after their manufacturing is terminated. Parts shall be replaceable. Methods of replacement shall be made known to users by means of operation manuals or the like.
- (7) Design of the equipment shall consider the possibility of separating raw materials when they are used and collected as waste.
- (8) The possibility of saving resources, recycling materials, and reducing the load on incineration shall be taken into consideration in designing the packaging of the equipment.

4-2 Quality Criteria

- (1) The quality shall meet Article 4 Government ordinance of Water Work Law "Standard for structure of domestic water supply equipment". Japanese Industrial Standards and other requirements, if applicable, shall also be met.

5. Certifying Conformity to Criteria

- (1) Relevant data certifying conformity of the product to each of the prescribed criteria shall be submitted with the application form.
- (2) Regarding environmental criteria 4-1 (1), a document issued by a third party or a public organization certifying the conformity with the water-saving criteria per Attachment 2, and also a document certifying the conformity with the construction criteria per Attachment 2 shall be submitted.
- (3) Regarding environmental criteria 4-1 (2), instruction manuals shall be submitted, with descriptions of manufacturer, contact point, and water-saving conditions (see Attachments 1,3, and 4.)
 - Installation method shall be described specifically.
 - Responsibility shall be identified specifically.
- (4) Regarding environmental criteria 4-1 (3), a self-certificate issued by the manager of the equipment manufacturing factory shall be submitted. The self-certificate shall state that the location environmental laws, regulations and agreement applicable to the location where the factory exists have been followed for five years.
- (5) Regarding environmental criteria 4-1 (4), a certificate of test results shall be submitted.
- (6) Regarding environmental criteria 4-1 (5) and (6), instruction manuals and other documents certifying the conformity shall be submitted.
- (7) Regarding environmental criteria 4-1 (7), a list of materials used for the equipment shall be submitted.
- (8) Regarding environmental criteria 4-1 (8), the application equipment shall specifically describe the packaging condition and packaging materials. (Drawings or photograph may be used as supplements.)
- (9) Regarding environmental criteria 4-2 (1), documents certifying the conformity with Article 4 Government ordinance of Water Work Law "Standard for structure of domestic water supply equipment", as well as Japanese Industrial Standards and other requirements.

6. Other Requirements

- (1) Products are classified by use and brand name as per Attachment 1. Classification by size is not applied.
- (2) "Mizu wo Taisetuni(Save Water)" shall be indicated at the bottom of the mark.

Enactment: September 1, 1999

This product category shall remain in effect for five years at maximum from the date of establishment, and is subject to review for change or abolition if necessary.

Attachment 1

Object Commodities

| Scope | | Water-saving equipment | Building | | | | Location | | | | |
|-------|------|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | | | Detached house | Apartment | Office | Other | Kitchen | Bathroom | Washroom | Toilet | Other |
| A | (1) | Water-saving type water closet (low tank type) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | | | | <input type="radio"/> | |
| | | Water-saving type water closet (flush-valve type; as a complete set with a water-saving flush valve) | | | <input type="radio"/> | <input type="radio"/> | | | | <input type="radio"/> | |
| | (2) | Automatic washing device with flow control and built-in urinal | | | <input type="radio"/> | <input type="radio"/> | | | | <input type="radio"/> | |
| B | (3) | Water-saving top | <input type="radio"/> | | <input type="radio"/> | | <input type="radio"/> |
| | | Water tap with built-in water-saving top | <input type="radio"/> | | <input type="radio"/> |
| | | Flow-control valve (with built-in water tap, with built-in piping) | <input type="radio"/> | | <input type="radio"/> |
| | | Water tap with built-in flow-control valve | <input type="radio"/> | | <input type="radio"/> |
| | | Faucet with flow-control cap with built-in flow-control valve | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | | | | | |
| | (4)* | Faucet with aerator function | <input type="radio"/> | | <input type="radio"/> | | <input type="radio"/> |
| | | Combination faucet (thermostat type) | <input type="radio"/> | | |
| | (8) | Combination faucet (single lever type) | <input type="radio"/> | | <input type="radio"/> | | |
| | | Faucet with volume-control mechanism | <input type="radio"/> | <input type="radio"/> | | <input type="radio"/> | | <input type="radio"/> | | | |
| | (9) | Self-closing faucet | | | | <input type="radio"/> | | <input type="radio"/> | <input type="radio"/> | | |
| | (10) | Automatic tap | | | <input type="radio"/> | <input type="radio"/> | | | <input type="radio"/> | | |

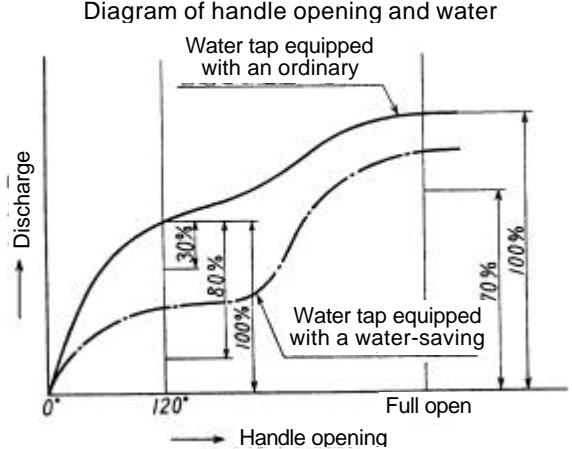
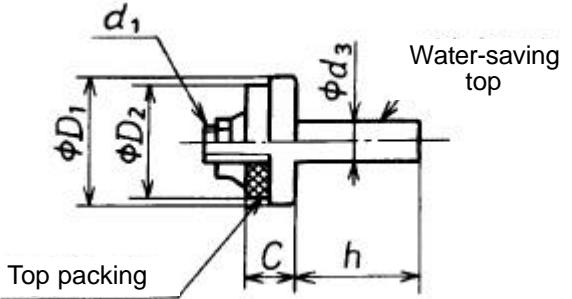
(*) Preventing waste during temperature regulation

Note: "Toilet" in the "location" column refers to a stool urinal and its system.
Washstand in a toilet is classified into "washroom."

| | | |
|--|-------------------------------------|--|
| Product | | Water-saving type water closet (low tank type) |
| Environmental criteria: water-saving criteria per 4-1 (1) | Water saving criteria | (1) Washing water shall be 6 liters or less. Feed water shall be measured at water pressure of 0.1 MPa. |
| | Structural criteria | (1) The water feed device shall meet the requirements of Article 4 Government ordinance of Water Work Law. (2) The flushing and discharging performance per JIS A5207 shall be met. (3) The transportation performance specified in the attached sheet shall be met. (4) Stool and flushing cistern shall be handled as a complete set. |
| Points other than water saving and electric energy consumption | - No electric energy shall be used. | |

| | | |
|--|-------------------------------------|--|
| Products | | Water-saving type water closet (flush-valve type, complete set with water-saving flush valve) |
| Environmental criteria: water-saving criteria per 4-1 (1) | Water-saving criteria | (1) Deviation in discharge volume at one flush action (the lever is kept pressed) shall be within $\pm 15\%$ of the discharge volume set for a supply pressure of 0.1 MPa. Setting of the discharge volume shall be easy to adjust. (2) Flush water volume shall be 6 liters or less when measured at a water pressure of 1 MPa. |
| | Structural criteria | (1) The water feed device shall meet the requirements of Article 4 Government ordinance of Water Work Law. (2) The water-saving flush valve shall supply a fixed volume of water even when the lever is kept depressed. (3) The washing and the discharge performance shall meet the requirements of JIS A5207. (4) The transportation functions specified in the attached sheet shall be met by the set of the flush valve and the stool. (5) Stool and flushing cistern are handled as a complete set. |
| Points other than water saving and electric energy consumption | - No electric energy shall be used. | |

| | | | |
|---|-----------------------|---|--|
| Products | | Automatic washing device with flow control and built-in urinal | |
| Environment-related criteria: water-saving criteria per 4-1 (1) | Water saving criteria | (1) An automatic washing device with flow control shall be completed with a urinal per JIS A 5207 and shall meet the washing requirements of JIS A 5207. A urinal with built-in automatic washing device with flow control shall comply with the washing performance per JIS A 5207. (2) The maximum water volume shall be 4 liters per flush. (3) The water volume shall be controlled depending on time of use and continual use. (Data shall be submitted at application.) | |
| | Structural criteria | (1) The water feed device shall meet the requirements of Article 4 Government ordinance of Water Work Law. (2) Consideration of maintenance shall be incorporated. | |
| Points other than water saving and electric energy consumption | | (1) Operation shall be powered by self-power generation. External power supply (200V, single-phase AC) shall not be required. (2) The battery life shall be equivalent to the life of the product (more than 10 years.) (3) The battery shall not employ cadmium, lead or mercury. This requirement may not be applied if a recover and recycling system for used batteries has been established. | |

| | | |
|--|-----------------------|--|
| Products | | Water-saving top and water tap with built-in water-saving top |
| Environmental criteria: water-saving criteria per 4-1 (1) | Water saving criteria | <p>(1) Water saving shall be 30% or more at water pressure 0.1 MPa and handle opening 120 degrees.</p> <p>(2) The water tap equipped with a water-saving top shall have the following water discharge performance (according to JIS B2061):</p> <ul style="list-style-type: none"> - When the handle is opened 120 degrees, the discharge rate shall be more than 20% but not be more than 70% of that when the water tap equipped with an ordinary top (water saving 30% or more). - When the handle is fully opened, the discharge rate shall be not less than 70%. - Discharge water pressure shall be set to 0.1 MPa.  |
| | Structural criteria | <p>(1) A top which can save water, with a specially designed valve-seat fixing nut or any other means. A water tap equipped with such a water-saving top.</p> <p>(2) A replacing water-saving top shall be capable of easily replacing an installed top.</p> <p>(3) Article 4 Government ordinance of Water Work Law shall be met.</p>  |
| Points other than water saving and electric energy consumption | | <ul style="list-style-type: none"> - No electric energy shall be used. |

| | | |
|--|-----------------------|---|
| Products | | Flow-control valve, faucet with flow-control cap with built-in flow-control valve, and faucet with built-in flow-control valve |
| Environmental criteria: water-saving criteria per 4-1 (1) | Water saving criteria | (1) When the handle is fully opened, the proper flow shall be in the range of 5-8 liters/min at a water pressure of 0.1 MPa and more and at 0.7MPa and lower. |
| | Structural criteria | (1) A flow-control valve, a flow-control cap with such a control valve built in, or faucet with such flow-control valve built in, which does not allow the water discharge to exceed a certain limit (2) Article 4 Government ordinance of Water Work Law shall be met. (3) Branching after the point of installation shall not be made. A flow-control valves shall be installed after branching. One flow-control valves shall correspond to one faucet. (4) An instruction manual shall be supplied to allow usage that meets the enough flow volume (hand washing, face washing, tableware washing, etc. for this category). |
| Points other than water saving and electric energy consumption | | - No electric energy shall be used. |

| | | |
|--|-----------------------|---|
| Products | | Faucet with aerator function |
| Environmental criteria: water-saving criteria per 4-1 (1) | Water saving criteria | (1) At a water pressure of 0.1 MPa or more and at a water pressure of 0.7 MPa or less, the discharge shall not be more than 80% of that of the tap without the aerator cap. (2) The discharge shall not be less than 5 liters/min at a water supply pressure of 0.1 MPa with a fully opened lever. |
| | Structural criteria | (1) Faucet equipped with an aerator cap which can save water by mixing air into water flow. (2) Article 4 Government ordinance of Water Work Law shall be met. |
| Points other than water saving and electric energy consumption | | - No electric energy shall be used. |

| | | |
|--|-----------------------|--|
| Products | | Combination faucet (thermostat type) |
| Environmental criteria: water-saving criteria per 4-1 (1) | Water saving criteria | <p>Structural criteria</p> <p>(1) A combination faucet with a built-in mechanism for supplying water at a temperature preset with a temperature-setting dial, which is controlled with hot water and cold water mixed, in which the mixing ratio is controlled automatically even if the pressure or temperatures of the hot water or cold fluctuates. (Refer to the operation principle scheme.) (Based on JIS B2061 Faucets, ball taps and flush valves.)</p> <p>(2) The discharge water temperature when the temperature indicating dial is set to approximately 40 shall be within ± 3 of the set temperature. (Based on JIS B2061 Faucets, ball taps and flush valves.)</p> <p>(3) The discharge water temperature shall be within ± 3 of a temperature set to approximately 40 when the primary water pressure is fluctuated. (Based on JIS B2061 Faucets, ball taps and flush valves.)</p> <p>(4) The thermostat-type combination faucet shall be equipped with a safety device to prevent high-temperature water discharge. (Based on JIS B2061 Faucets, ball taps and flush valves for Water Supply.)</p> <p>(5) Article 4 Government ordinance of Water Work Law shall be met.</p> <p>Note: Method for testing the automatic temperature control performance for (2) and (3) shall be in accordance with 8.1.10 of JIS B 2061.</p> |
| Points other than water saving and electric energy consumption | | - No electric energy shall be used. |

| | | |
|--|-----------------------|--|
| Products | | Combination faucet (single lever type) |
| Environmental criteria: water-saving criteria per 4-1 (1) | Water saving criteria | <p>Structural criteria</p> <p>(1) A combination faucet which can turns water discharge on and off, and control the discharge rate and discharge temperature, by means of manipulating a single lever. (Based on JIS B2061 Faucets, ball taps and flush valves.)</p> <p>(2) There shall be a function that allows water flow to be controlled easily such as a multistage system.</p> <p>(3) Article 4 Government ordinance of Water Work Law shall be met.</p> |
| Points other than water saving and electric energy consumption | | - No electric energy shall be used. |

| | | |
|--|-----------------------|--|
| Products | | Faucet with volume-control mechanism |
| Environmental criteria: water-saving criteria per 4-1 (1) | Water saving criteria | <p>Structural criteria</p> <p>(1) A faucet which has a volume-regulating function (that makes water discharge stop when a preset volume has been discharged.) (Based on JIS B2061 Faucets, ball taps and flush valves.)</p> <p>(2) A faucet with volume-control mechanism shall meet the following requirement:</p> $(A - B)/A \leq 0.2$ <p>where: A: set water volume B: actual water volume (Based on JIS B2061)</p> <p>(3) Article 4 Government ordinance of Water Work Law shall be met.</p> |
| Points other than water saving and electric energy consumption | | - No electric energy shall be used. |

| | | |
|--|-----------------------|--|
| Products | | Self-closing faucet |
| Environmental criteria: water-saving criteria per 4-1 (1) | Water saving criteria | <p>Structural criteria</p> <p>(1) A faucet which structurally makes water discharged when a lever or a handle is manipulated and stopped automatically after a predetermined volume has been discharged when the lever or handle is released. (Based on JIS B2061 Faucets, ball taps and flush valves.)</p> <p>(2) A self-closing faucet shall be structurally capable of controlling water volume until it is stopped.</p> <p>(3) A self-closing faucet shall be structurally capable of stopping water while it is discharged.</p> <p>(4) Article 4 Government ordinance of Water Work Law shall be met.</p> |
| Points other than water saving and electric energy consumption | | - No electric energy shall be used. |

| Products | | Automatic tap |
|--|-----------------------|---|
| Environmental criteria: water-saving criteria per 4-1 (1) | Water saving criteria | <p>(1) At water pressure of 0.1MPa and higher, and at 0.7MPa and lower, discharge volume shall not exceed 5 liters/minute.</p> |
| | Structural criteria | <p>(1) An automatic tap shall automatically stop water discharge when a person extends his or her hand under the tap (without mechanical contact).</p> <p>(2) An automatic tap shall automatically stop water discharge when the person withdraws his or her hand from under the tap, within 2 seconds, as measured as per the attached sheet.</p> <p>(3) Article 4 Government ordinance of Water Work Law shall be met.</p> |
| Points other than water saving and electric energy consumption | | <p>(1) Operation shall be provided by self power generation. No external power supply (200V or 100V single-phase AC) shall be required.</p> <p>(2) The battery life shall be equivalent to the designed life of the product under normal operating conditions, which is 10 years or more.</p> <p>(3) The battery shall not employ cadmium, lead or mercury. This requirement may not be applied if a system has been established to recover and recycle used batteries.</p> |

Product Certification for Criteria "Water-Saving Equipment"

September 1, 1999

1. Understanding the Environmental Background

According to "Water Resources in Japan" of the fiscal 1998 issue, 90.7 billion cubic meters of water was used in 1995. This included 17.2 billion cubic meters of water for our daily life. Nation's water consumption per person differs by area. In Tokyo, for instance, a citizen uses 247 liters a day on an average. An average metropolitan citizens use 26 percent of water for bath, 24 percent for toilet, 22 percent for cooking, 21 percent for washing clothes, and 7 percent for washing their faces and other purposes. According to a "Survey on water-saving equipment, part 3", made in fiscal 1997, the minimum quantity of water needed for a citizen would be 179-195 liters per day provided that significant water-saving efforts were made in the present normal conditions (based on that 220 liters of water is presently used by a person a day.) Possibility of water saving is found in washing, and cooking, in a descending order, bathing.

Water saving can be achieved from two viewpoints: water-saving design of equipment and method of using water. Although this category focuses on water-saving designs of equipment, it is also important to save water by suitable methods of using it. Such methods would include reducing the frequency of washing clothes, reducing the frequency of rinsing out, and increasing the frequency of turning off shower and water taps.

Finally, it should be noted that efficient use of water saves water and sewage costs.

2. Applicable Products

Flow-control valves and water-saving taps which were not included in "flow-control valves and water-saving taps" were examined. Flow-control valves which are attached to faucet were included in this category. However those incorporated in piping were excluded because they cannot be identified visually.

Water-saving equipment installed on toilet tanks are excluded from this product category as before. Since water saving for a toilet should be examined as a system from water feed to sewage main piping, water-saving efforts, such as replacing existing parts or installing new parts, made by people other than the system builder may disturb the existing system. Furthermore, if the system is modified, the responsibility may not be identified.

Water saving in washing machines and tableware washing machines is meaningful, but these machines are excluded from this category because they should be examined from the viewpoint of not only water saving, but also energy saving. Bath water pumps for washing clothes are also excluded because they are used together with washing machines, and water saving should be examined from the washing machine side as well. Car washing machines and snow-smelting devices may be regarded as "facilities" and, since effective water saving should be studied from the viewpoint of facility management, they are also excluded from this category. Sprinklers are difficult to consider from the viewpoint of water saving, and therefore they are not examined this time.

Water closet (low tank type) with a selector lever depends on user's awareness, so cannot always be achieved irrespective of users. Consequently, these water closets are excluded from this category. Water closet (low tank type) with a hand-washing basin is a superior product for environmental conservation. However, since they are considered to have been widely popularized, these products simply with this function are excluded. Combination faucet (Mixing type) and combination faucet (two-valve type) with temporarily stopping mechanism are excluded because there exists upper-class equipment, which is of thermostat type and of single lever type.

Showers were examined showers with temporarily stopping mechanism (click shower) and showers with water-saving spray plate. In the case of a shower with temporarily stopping mechanism, water saving is made by users' awareness, so water saved, depending on the user. It was discussed that the switch system which makes water flow only while the switch is pressed by a user would make water saved always, not depending on the user. However, this system depends on how to use (the switch is used while the user is standing/sitting, or the switch is on the wall or held by the user). As a result of discussion, it was concluded to exclude these products. Showers with water-saving spray plate were also excluded because the necessary water quantity for using shower cannot be identified at this moment.

Detachable aerator caps were excluded because water feed conditions depend on the place where they are installed and it is difficult to check water quantity necessary after installation. Furthermore, lack of construction standard causes a problem in performance guarantee. It has been decided to examine aerator caps when the construction standard becomes available.

Water volume control mechanisms as systems were excluded. Flow-water imitation sound devices are actually effective depending on the conditions of installation. However, these devices are related to users' awareness, so it is difficult to consider them as an applicable products of the Eco Mark. As a conclusion, water volume control mechanisms were excluded because they do not satisfy the requirement for "water saving achieved by any user" or there is no need to use them.

| | | |
|---------------|--|------------------------|
| Attached data | - Basic concept of applicable products of the Eco Mark: | Attachments 3 and 4 |
| | - Locations and other conditions on applicable products: | Attachment 5 |
| | - Applicable products: | Attachment 1 |

3. Terminology Definitions

In this category, effective use of water is defined as "water saving" (reduction of the quantity of water used), "use of substitutive water" (e.g. rain water), and "reuse" (recycled water, multi-stage use, etc.).

Water saving is defined as "reduction of water quantity which was used previously while the primary performance is guaranteed, from the viewpoint of rational water use." For these terms, reference was made to "Survey on Methods of Evaluation of Water Saving Equipment for FY1995-1997, Parts 1~3" by Waterworks Bureau of the Metropolitan Government of Tokyo (Chair F. Kiya). For the names of equipment, reference was made to The Japan Valve Manufacturers Association, The Society of Heating, Air-Conditioning Sanitary Engineer's of Japan, Japanese Industrial Standards, etc.

4. Certification Criteria

4-1 Details of Establishing Environmental Criteria

For setting up the criteria, environmental impact over the whole life cycle of a product was considered, using the table of environmental impacts at each stage of the product life cycle. As a result, environmental impact items which are considered to be important for establishing certification criteria were selected in view of environmental impact over the whole life cycle of the product. For these items, qualitative or quantitative criteria are to be considered.

Environmental impact items considered for the category of "Water-saving Equipment" are as shown in the item selection table of environmental impacts at each stage of the product life cycle (marked with and in the table). Out of these items were finally selected as the environmental criteria: A-2, B-1, B-7, B-8, D-1, D-8, and F-7 (in the table).

The columns with in the table show items which were out of the scope of review or which were reviewed in combination with other items. The details of setting up the environmental criteria are described below.

Table Environmental impacts at each stage of the product life cycle

| Environmental impact | Stage of product life cycle | | | | | |
|--|-----------------------------|-----------------|----------------|-------------------|------------|-------------|
| | A Resource extraction | B Manufacturing | C Distribution | D Use/consumption | E Disposal | F Recycling |
| 1. Resource consumption | | | | | | |
| 2. Emission of substances affecting global warming | | | | | | |
| 3. Emission of ozone-layer-depleting substances | | | | | | |
| 4. Deterioration of the ecosystem | | | | | | |
| 5. Emission of air pollutants | | | | | | |
| 6. Emission of water pollutants | | | | | | |
| 7. Waste and its disposal | | | | | | |
| 8. Use and emission of hazardous substances | | | | | | |
| 9. Other environmental impacts | | | | | | |

B Manufacturing Stage

B-1 Resource consumption

The following point was investigated under this item:

- (1) Reducing resource consumption by reuse of byproducts produced during manufacturing

Regarding (1), observance of applicable environmental laws and regulations as well as agreements on pollution protection will contribute to reducing the environmental impacts, so this item was selected as an item for which criteria should be established.

B-7 Waste and its disposal

The following point was investigated under this item:

- (1) Efforts for improving the yield and other efforts for reducing waste shall be made in manufacturing processes

Regarding (1), although these efforts have long been made by manufacturers, it was concluded that observance of applicable environmental laws and regulations as well as agreements on pollution protection will contribute to reducing the environmental impact, so this item was selected as an item for which criteria should be established.

B-8 Use and emission of hazardous substances

The following point was investigated under this item:

- (1) Hazardous substances shall be processed in a safe manner.

Regarding (1), it was concluded that observance of applicable environmental laws and regulations as well as agreements on pollution protection in handling hazardous substances will contribute to reducing the environmental impact, so this item was selected as an item for which criteria should be

established.

D Use/consumption Stage

D-1 Resource consumption

The following points were investigated under this item:

- (1) Saving household water will contribute to saving the resources consumption (in connection with other environmental impacts.)
- (2) Building a theoretical system which defines water-saving equipment in this category, focusing on "effective use" or "rational use" of water; specifically, "utilization of sewage cascade" and "reducing the required quantity of water"
- (3) It should be confirmed that required water quantity is less than before. (Required water quantity decreases while maintaining the primary performance.)
- (4) Long service life (For example, the construction allows exchanging spare parts easily, a well organized spare parts supply system allows users or suppliers to repair easily.)

Regarding (1), water does not decrease even if it is used, unlike fossil fuels, as mentioned in "Environmental Background." However, conversion of natural water circulation into artificial circulation causes environmental impact, such as energy consumption. It was concluded to select water saving as an item for which criteria should be set up.

Regarding (2) and (3), "water-saving type water closet (low tank type)" and "water-saving type water closet (flush valve type, handled as a complete set with a flush valve)" contribute to saving water which washes, discharges, and transports filth (reducing the required water quantity).

"Water-saving flush valve" is handled as a set with a water-saving type water closet because the valve alone does not contribute to water saving. "Automatic washing device with flow control and built-in urinal" contributes to saving water in the sense of reducing the required water quantity, when it is continually used at a terminal rail station.

"Water-saving top and faucet with built-in water-saving top" are designed to save discharge water.

"Flow-control valve, faucet with built-in flow-control valve, and water tap with flow-control cap with built-in flow-control valve" are effective in reducing water discharge within a certain limit, so contribute to saving waste of water. In view of this, it has been decided to clarify the range of adequate water discharge flow and such products that meet this range should be included in this category. Specifically, 5 to 8 liters/min (standard 6 liters/min) was employed for washing hands, washing face, and washing tableware, based on "Study on Feeling of Use of Hot Water Supply Equipment" (summary), issued by Air Conditioning and Sanitary Engineering Association in February 1991 and "Survey on Methods of Evaluation of Water Saving Equipment for FY1995-1997, Parts 1~3" by Waterworks Bureau of the Metropolitan Government of Tokyo.

"Water taps with aerator function" are convenient for washing a small number of pieces and can save water, although this is not convenient for washing a lot of pieces. We studied this item in the same manner as water-saving top. Combination faucets (thermostat type, single-lever type) contribute to saving water in the sense of preventing waste of water. Single-lever combination faucets were included in this category on the condition that water flow can be easily regulated; however, it was concluded that use in a bathroom should not be recognized for preventing accidents.

Faucets with volume-control mechanism can save water in terms of preventing water overflow when the tap is kept open at filling a bath. Self-closing faucets save water in terms of preventing water overflow in a public bath. However, since water cannot be stopped while it is discharged, water more than necessary may be discharged for people who are conscious of saving water. Therefore it has been decided to include self-closing faucets into this category on the condition that the faucets can be closed even while water is discharged.

Automatic faucets are useful for saving water at airports and terminal rail stations, by preventing

excess water flow. Since water saving is not achieved by any users, we have decided to include automatic faucets into this category only for frequent use.

Regarding (4), the possibility of spare parts was adopted as the most important factor. However, maintenance of product usually carried out by a specialist because it may cause unexpected accidents. It has been concluded to select this point as an item for which criteria should be set up, on the condition that a design facilitating repairing and replacing spare parts and also an organized spare parts supply system are confirmed at the time of application for Eco Mark.

D-2 Emission of substances affecting global warming

The following point was investigated under item:

- (1) Reducing CO₂ emission by saving water

Reducing use of water consumption contributes to saving energy which is used for water purification. This item has been selected as an item for which criteria should be set up.

According to data issued by the Environmental Agency, 0.16 kg CO₂ is discharged for 1 m³ household water. For example, reducing waste of shower water by 3 minutes at each time of taking shower results in 15.3 kg CO₂ reduction per year. Reducing waste of water used for washing face and teeth by 2 minutes a day results in 1.5 kg CO₂ reduction per year.

D-8 Use and emission of hazardous substances

The following point was investigated under this item:

- (1) Metals that may leach out should never contaminate drinking water.

Requirement (1) is stipulated in Waterworks Law as described in "5. Quality" of this document. It has been decided to select this item for which criteria should be set up.

D-9 Other environmental impacts

The following point was investigated under this item:

- (1) Saving water seems to be beneficial from economic viewpoint, but is this realistic? It would be necessary to request that water-saving equipment developers ensure that the discharge side will not negatively affect the environmental impact.

Regarding (1), water contaminations depends on the quantity of pollutants and (the quantity of) water. If water saving reduces the quantity of water discharged while the quantity of pollutants remain unchanging, water pollution will develop, increasing the loads in rivers, lakes, and water purification tanks. Users should attempt to reduce pollutants in accordance with reducing the use of water. It has been concluded not to select this item as an item for which criteria should be selected. However, we should encourage, users not to use too much detergent and clean oily tablewares after wiping off.

F. Recycling Stage

F-1 Resource consumption

The following point was investigated under this item:

- (1) Recycling of copper alloys used as metal fittings

Presently manufacturing are not involved in (1). Copper alloys are now collected and recycled as valuables on a social scale. Therefore this item was not selected as an item for which criteria should be set up.

F-7 Waste and its disposal

The following point was investigated under this item:

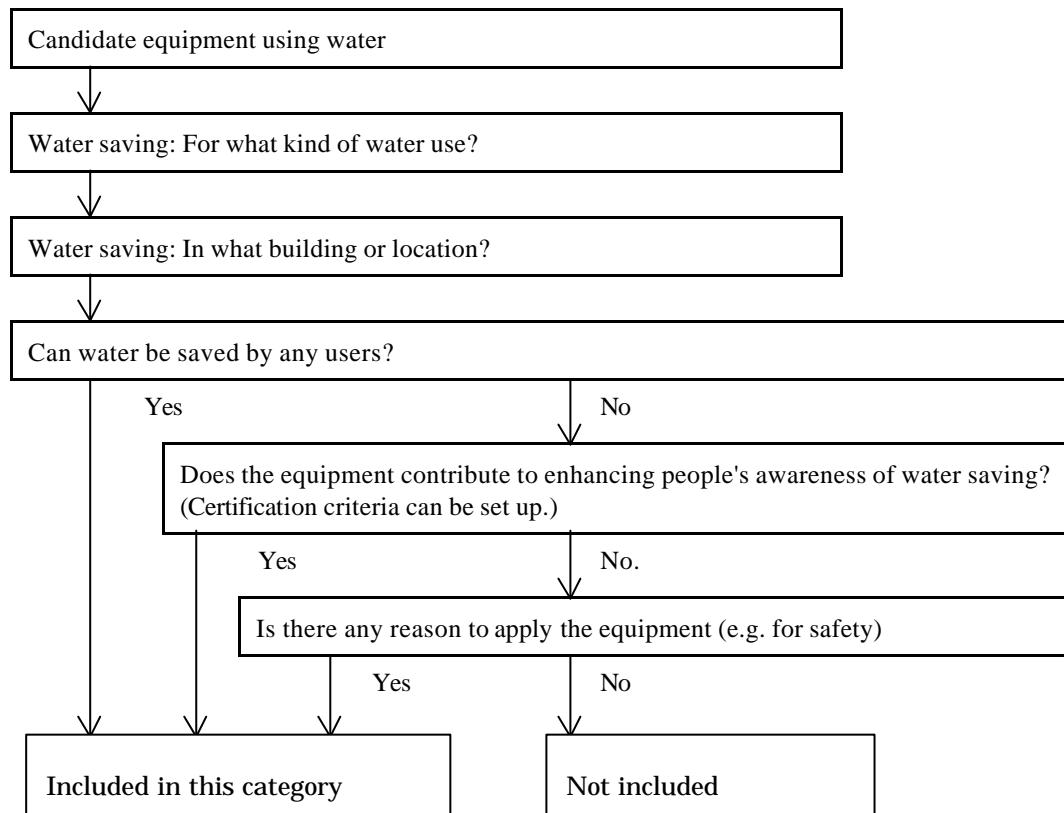
- (1) Name of raw material should be marked for easy source sorting.

From the viewpoint of waste treatment and recycling, it is desirable that raw materials are clearly shown. However, since many pieces of equipment which may be classified into this category is rigidly constructed to suit their purposes, and marking of raw material names is not necessarily advantageous. Consequently, it has been decided to select this item as an item for which criteria should be set up, on the condition that raw material names shall be reported to the Eco Mark Office when the application for the Eco Mark is submitted, in order to encourage the applicant to perform product development and system organization from the viewpoint of this item.

5. Quality criterion

Conformity with Article 4 Government ordinance of Water Work Law "Standard for structure of domestic water supply equipment" is required. Conformity with the criteria for leaching performance applies to drinking-water supply equipment. Japanese Industrial Standards, Approval Criteria for Better Housing Parts under the CENTER FOR BETTER LIVING Certification Standards, and other applicable standards should be followed.

Products of this category have been examined as follows:



Note: Enhancing people's awareness of water saving refers to that the quantity of water saved can be confirmed.

Scope of Category and Products (Draft)

X. Product category that does not largely affected by user's awareness of saving water

| Classification | Product | Water consumption can be reduced by any users in comparison with conventional equipment. | Water consumption may be reduced by any users in comparison with conventional equipment. | Conventional product |
|----------------|---|--|--|---|
| Stool | Water-saving type water closet(low tank type,flush valve type) | | | Non-water-saving product |
| | Water closet with washing basin (low tank type) | | | Stool without basin, with washing water |
| | Water closet with selector lever (low tank type) | | | Stool without selector lever |
| Urinal | Urinal with built-in automatic washing device with flow control | | | Automatic-wash urinal, without A1 function |
| Water tap | Water-saving flush valve | | | Ordinary flush valve |
| | Thermostat-type combination tap | | | Only at hot-water regulation with 2-valve combination tap |
| | Mixing type combination tap | | | Only at hot-water regulation with 2-valve combination tap |
| Other | Automatic washing device with flow control | | | Automatic-wash urinal without A1 function |

Y. Product category that is largely affected by user's awareness of saving water

| Classification | Product | Water-saving effect evaluation criteria ^{*1} | | | | | Types of conventional product |
|----------------|---|---|--|--|--|---|--|
| | | A1 | A2 | B1 | B2 | C1 | |
| | | When the product is used by any users, water consumption is less than that of conventional product which is used with water-saving awareness. | When the product is used with water-saving awareness, water consumption is less than that of conventional product which is used with water-saving awareness. | When the product is by any users, water consumption is equivalent to that of conventional product which is used with water-saving awareness. | When the product is used with water-saving awareness, water consumption is equivalent to that of conventional product which is used with water-saving awareness. | When the product is by any users, water consumption is less than that of conventional product which is used without water-saving awareness. | |
| Water tap | Water tap with shower head with water-saving spray plate | | | | | | Faucet with ordinary shower head |
| | Water tap with temporarily stopping mechanism | | | | | | 2-valve combination tap without temporarily stopping mechanism |
| | Shower tap with temporarily stopping mechanism | | | | | | 2-valve combination tap without temporarily stopping mechanism |
| | Faucet with volume-control mechanism | | | | | | Ordinary faucet |
| | Automatic water tap | | | | | | Ordinary faucet |
| | Faucet with built-in flow-control valve | | | | | | Ordinary faucet |
| | Self-closing water tap | | | | | | Ordinary faucet |
| Other | Single-lever water tap | | | | | | Ordinary faucet |
| | Flow-water imitation sound device | | | | | | FV |
| | Shower with water-saving spray plate | | | | | | Ordinary shower head |
| | Shower head with temporarily stopping mechanism | | | | | | Ordinary shower head |
| | Flow-control valve | | | | | | Without flow-control valve |
| | Water-saving top | | | | | | Ordinary top |
| | Faucet with aerator function | | | | | | Ordinary faucet without aerator cap |
| | Faucet with flow-control cap with built-in flow-control valve | | | | | | Ordinary faucet without cap |

*1 Water-saving effect evaluation criteria images

| | | | Conventional equipment | | | | | | |
|----------------------------|---|---|-----------------------------------|------------------------------|---------------------------------|-----------------------|------------------------------------|--------|--|
| | | | Usage not meeting primary purpose | | Use with water-saving awareness | | Use without water-saving awareness | | |
| | | | none | A | B | C | D | | |
| Water-saving equipment | Use by any users without water-saving awareness | 1 | × | | | | × | × | |
| | Use with water-saving awareness | 2 | × | | × | × | × | × | |
| Image of water consumption | | | Critical water quantity | Significantly small quantity | Small quantity | Rather small quantity | Normal | Excess | |
| | | | Limit ^{*2} | | | | | | |

*2 Limit value: Minimum required water quantity which allows to secure functions and safety at water-using action (Although figures differ by action, they are expressed in one line.)

Water-Saving Equipment Classified by Facility and Place of Installation, and Water Feed System

| Building | | House (detached, low-rise) | | | | Office in general | | | | Other place | | |
|---|--------------------|--|--|---|---|--|----------|----------|---------|---|---|---------------------|
| Place Water feed system | | Toilet | Bathroom | Washroom | Kitchen | Toilet | Bathroom | Washroom | Kitchen | Preventing freezing of melted snow | Piping | |
| Connected directly with waterworks | Direct pressure | -Water-saving type water closet (low tank type) -Water closet with washing basin (low tank type) -Water closet with a selector lever (low tank type) | -Faucet with shower head with water-saving spray plate -Shower tap with temporarily stopping mechanism -Faucet with volume-control mechanism | -Automatic tap -Faucet with built-in flow-control valve -Self-closing faucet -Flow-control valve -Water-saving top -Faucet with aerator function -Faucet with flow-control cap with built-in flow-control valve -Tableware washing machine | -Automatic tap -Faucet with built-in flow-control valve -Self-closing faucet -Flow-control valve -Water-saving top -Faucet with aerator function -Faucet with flow-control cap with built-in flow-control valve -Tableware washing machine | See the column under independent house | | | | See the column under independent house | See the column under independent house | |
| | Pressuri gation | -Automatic washing device with flow control -Built-in urinal | -Water-saving shower head -with water-saving spray plate -with temporarily stopping mechanism | | | | | | | | | |
| Roof tank, overhead tank, pressure tank | | | | | | -Water-saving type water closet(flush valve) -Water-saving flush valve -Automatic washing device with flow control -Built-in urinal -Flow-water imitation sound device | | | | -Automatic tap -Faucet with built-in flow-control valve -Self-closing faucet -Flow-control valve -Water-saving top -Faucet with aerator function -Faucet with flow-control cap with built-in flow-control valve | -Automatic tap -Faucet with built-in flow-control valve -Flow-control valve -Water-saving top -Faucet with aerator function -Faucet with flow-control cap with built-in flow-control valve | -Flow-control valve |

| Building | | Apartment house (high-rise) | | | | Other (hotels, shops, public facilities, rail stations, hospitals) | | | | |
|---|---|---|---|---|---|---|---|--|---|-------------|
| Place Water feed system | | Toilet | Bathroom | Washroom | Kitchen | Toilet | Bathroom | Washroom | Kitchen | Other place |
| Connected directly with waterworks | Direct pressure pressuri- gation | | | | | | | | | |
| Roof tank, overhead tank, pressure tank | | <ul style="list-style-type: none"> -Water-saving type water closet (low tank type) -Water closet with washing basin (low tank type) -Water closet with a selector lever (low tank type) -Automatic washing device with flow control -Built-in urinal | <ul style="list-style-type: none"> -Faucet with shower head with water-saving spray plate -Shower tap with temporarily stopping mechanism -Faucet with volume-control mechanism -Water-saving shower head <ul style="list-style-type: none"> -with water-saving spray plate -with temporarily stopping mechanism | <ul style="list-style-type: none"> -Automatic tap -Faucet with built-in flow-control valve -Self-closing faucet -Flow-control valve -Water-saving top -Faucet with aerator function -Faucet with flow-control cap with built-in flow-control valve -Washing machine | <ul style="list-style-type: none"> -Automatic tap -Faucet with built-in flow-control valve -Shower tap with temporarily stopping mechanism -Water closet with washing basin (low tank type) -Water closet with a selector lever (low tank type) -Automatic washing device with flow control -Built-in urinal -Flow-water imitation sound device | <ul style="list-style-type: none"> -Water-saving type water closet (low tank type) -Water-saving type water closet (flush valve) -Water-saving flush valve -Water closet with washing basin (low tank type) -Faucet with volume-control mechanism -Self-closing faucet -Water-saving shower head <ul style="list-style-type: none"> -with water-saving spray plate -with temporarily stopping mechanism -Faucet with flow-control cap with built-in flow-control valve | <ul style="list-style-type: none"> -Faucet with shower head with water-saving spray plate -Shower tap with built-in flow-control valve -Self-closing faucet -Flow-control valve -Water-saving top -Faucet with aerator function -Faucet with flow-control cap with built-in flow-control valve | <ul style="list-style-type: none"> -Automatic tap -Faucet with built-in flow-control valve -Water-saving top -Faucet with aerator function -Faucet with flow-control cap with built-in flow-control valve | <ul style="list-style-type: none"> -Car washing machine (facilities) -Water spray -Washing machine | |

Other equipment: Snow removing pump

Bath water pump

Water-saving device installed on toilet tank

Arial: Object commodities under this category

Century: Commodities being reviewed

Attachment: flushing cistern for water-saving stool

1. At large flush

(1) Testing method

As illustrated below, connect a test flush conduit^{*1)} to the stool through a horizontal branch pipe. Fill the flushing cistern with water to an effective level, set the water supply pressure to 0.1 MPa (1 kgf/cm²), and fill up the trap with water. Mark a 50-mm-width circumferential belt on the flushing surface using red ink, at a level about 30 mm below the flushing ports. Throw substitutive excrement^{*2)} and test paper balls^{*3)} into the stool and immediately give a flush. Check that the red ink has been completely removed, and also the substitutive excrement and the test paper ball have been completely discharged out of the conduit. Repeat the test five times.

(2) Criteria

No red ink trace should remain. The substitutive excrement and the test paper ball should be completely discharged out of the conduit.

2. At small flush

(1) Testing method

As illustrated below, connect a test flush conduit^{*1)} to the stool through a horizontal branch pipe. Fill the flushing cistern with water to an effective level, set the water supply pressure to 0.1 MPa (1 kgf/cm²), and fill up the trap with water. Mark a 50-mm-width circumferential belt on the flushing surface using red ink, at a level about 30 mm below the flushing ports. Throw test paper balls^{*3)} into the stool and immediately give a flush. Check that the red ink has been completely removed, and also the test paper balls have been completely discharged out of the conduit. Repeat the test five times.

(2) Criteria

No red ink trace should remain. The test paper balls should be completely discharged out of the conduit.

Notes

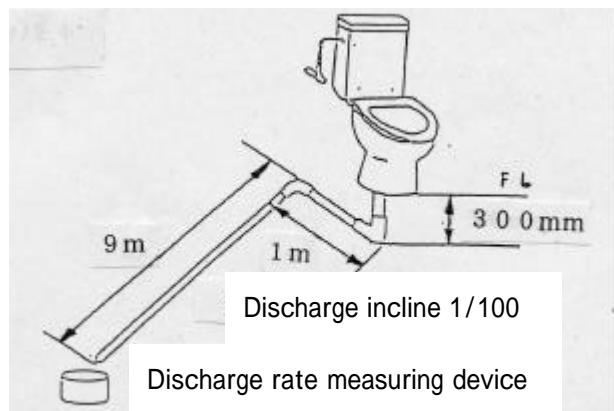
*1) Test Flush conduit: a transparent acrylic pipe (diameter 75 mm, horizontal length 10 m) laid at a discharge incline of 1/100.) A 90-degree elbow (LL) is to be used as a joint fitting.

*2) Substitutive excrement: two pieces of PVA sponge of 25 mm in diameter and 80 mm in length, saturated with water (specific gravity approx. 1.05)

PVA sponge



- *3) Test Paper ball: four pieces of toilet paper (JIS P 4501) crumpled into balls (50 mm to 70 mm in diameter)



Attachment: water-saving stool type FV and water-saving FV

(1) Testing method

As illustrated below, connect a test flush conduit*1) to the stool through a horizontal branch pipe. Set the flushing FV to an effective level and set the water supply pressure to 0.1 MPa (1 kgf/cm²). Fill up the trap with water, and mark a 50-mm-width circumferential belt on the flushing surface using red ink, at a level about 30 mm below the flushing ports. Throw substitutive excrement*2) and test paper balls*3) into the stool and immediately give a flush. Check that the red ink has been completely removed, and also the substitutive excrement and the test paper balls have been completely discharged out of the conduit. Repeat the test five times.

(2) Criteria

No red ink trace should remain. The substitutive excrement and the test paper balls should be completely discharged out of the conduit.

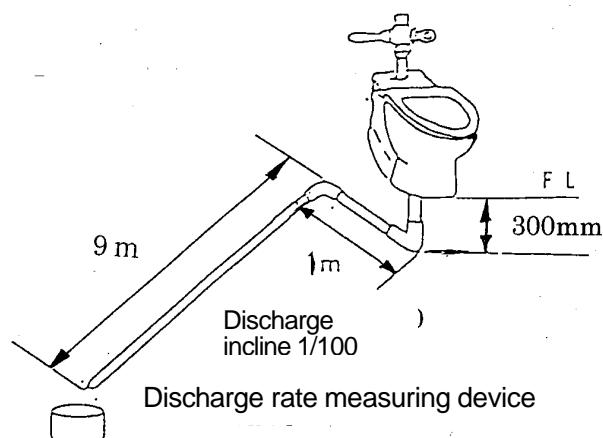
Notes

*1) Test Flush conduit: a transparent acrylic pipe (diameter 75 mm, horizontal length 10 m) laid at a discharge incline of 1/100. A 90-degree elbow (LL) is to be used as a joint fitting.

*2) Substitutive excrement: two pieces of PVA sponge of 25 mm in diameter and 80 mm in length, saturated with water (specific gravity approx. 1.05)

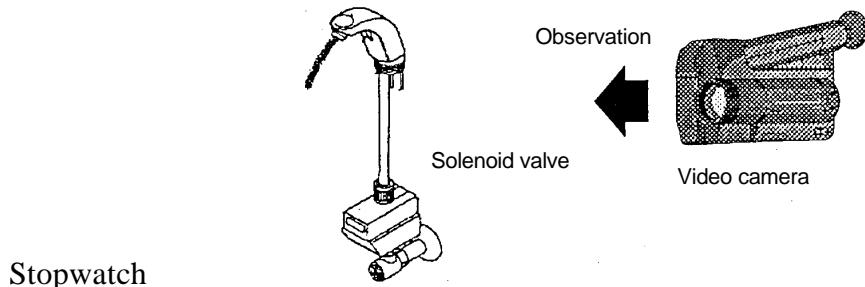


*3) Test paper ball: four pieces of toilet paper (JIS P 4501) crumpled into balls (50 mm to 70 mm in diameter)



Procedure for measuring water stopping time

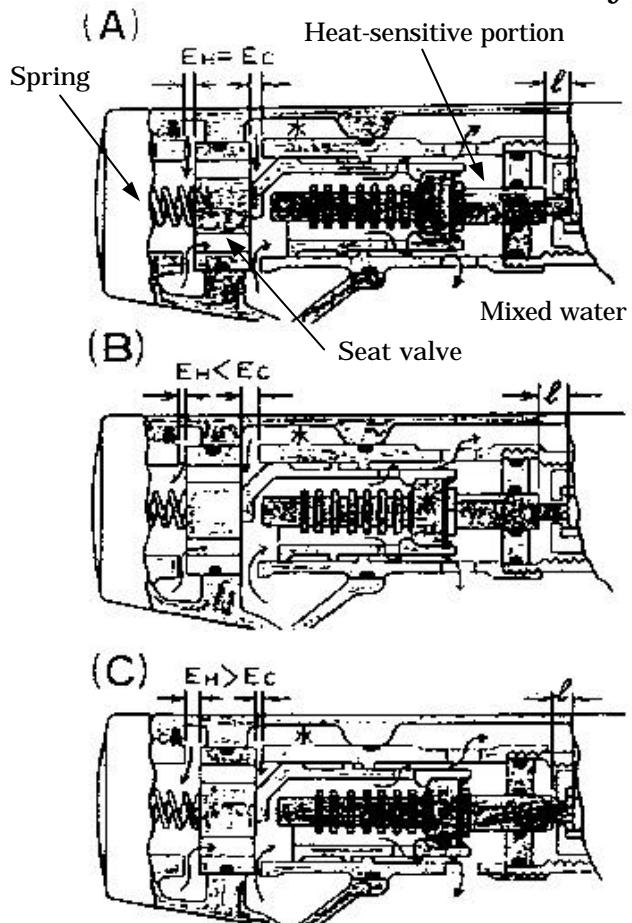
- (1) Set the flow rate of the automatic tap to an optimum discharge rate.
- (2) Start videotaping, then make water discharge by extending your hand. Start to measure time at the moment when you withdraw your hand out from the water flow. Videotape the stopwatch as well.
- (3) Analyze the videotape exposures one after another. The time needed until the main discharge water flow gathers and bundles is defined as the time for stopping water. Check the difference between the time shown by the stopwatch videotaped. (It is anticipated that a few drops of water follow at the end. However, since the water volume is considered to be in a negligible range, this time should not be included in the water stopping time.)
- (4) Repeat the measurement five times because the time until water stops may fluctuate. The average time should be defined as the time for stopping water.



Note: Since the measuring system is simple, products of various manufacturers can be compared.

Thermostat operation principle

Thermostat type



EC: cold-water-side clearance

EH: hot-water-side clearance

- (A) When mixed water is at an appropriate temperature:

The heat-sensitive portion which expands and shrinks by detecting the temperature of mixed water and a spring located on the reverse side are balanced to locate the seat valve at the center.

- (B) When the temperature of mixed water rises:

- decrease in cold-water pressure
- increase in hot-water pressure
- increase in hot water temperature

As the heat-sensitive portion detects a high temperature to expand, the seat valve is pushed to the left to narrow the hot-water passage, resulting in a decreased hot-water flow.

- (C) When the temperature of mixed water drops:

- increase in cold-water pressure
- decrease in hot-water pressure
- decrease in hot-water temperature

As the heat-sensitive portion detects a high temperature to shrink, the seat valve is pushed to the right to narrow the hot-water passage, resulting in a decreased cold-water flow.

Attached Certificates

1) Please circle the area of the product to be applied for certification

| | |
|--|----------|
| Water-saving type water closet (low tank type) | |
| Water-saving type water closet (flush-valve type) | |
| Automatic washing device with flow control and built-in urinal | |
| Water-saving top | |
| Water tap with built-in water-saving top | Example: |
| Flow-control valve (with built-in water tap) | |
| Faucet with built-in flow-control valve | |
| Faucet with flow-control cap with built-in flow-control valve | |
| Faucet with aerator function | |
| Combination faucet (thermostat type) | |
| Combination faucet (single lever type) | |
| Faucet with volume-control mechanism | |
| Self-closing faucet | |
| Automatic water tap | |

2) Conformity to "water-saving product" requirements 4-1

| | | |
|---|--|---------------------------|
| Conformity to "water-saving equipment" criteria in Attachment 2 | Conformity of the product (1), supporting values, etc. | Conformity yes/no values: |
| | Evidence to (1) (certificate, supporting data) | Example: See Attachment 1 |
| | Explanation of conformity to water-saving equipment criteria (1) | Conformity yes/no values: |
| | Evidence of conformity to (1) | |
| | Explanation of conformity to water-saving equipment criteria (2) | Conformity yes/no values: |
| | Evidence of conformity to (2) | |
| | Explanation of conformity to water-saving equipment criteria (3) | Conformity yes/no values: |
| | Evidence of conformity to (3) | |
| | Explanation of conformity to structural criteria (1) | Conformity yes/no values: |
| | Evidence of conformity to (1) | |
| | Explanation of conformity to structural criteria (2) | Conformity yes/no values: |
| | Evidence of conformity to (2) | |
| | Explanation of conformity to structural criteria (3) | Conformity yes/no values: |
| | Evidence of conformity to (3) | |
| | Explanation of conformity to structural criteria (4) | Conformity yes/no values: |
| | Evidence of conformity to (4) | |
| | Explanation of conformity to structural criteria (5) | Conformity yes/no values: |
| | Evidence of conformity to (5) | |
| | Conformity of the product (2), supporting values, etc. | Conformity yes/no values: |
| | Evidence to (2) (certificate, supporting data) | |
| | Conformity of the product (3), supporting values, etc. | Conformity yes/no values: |
| | Evidence to (3) (certificate, supporting data) | |
| | Conformity of the product (4), supporting values, etc. | Conformity yes/no values: |
| | Evidence to (4) (certificate, supporting data) | |
| | Conformity of the product (5), supporting values, etc. | Conformity yes/no values: |
| | Evidence to (5) (certificate, supporting data) | |
| | Conformity of the product (6), supporting values, etc. | Conformity yes/no values: |
| | Evidence to (6) (certificate, supporting data) | |
| | Conformity of the product (7), supporting values, etc. | Conformity yes/no values: |
| | Evidence to (7) (certificate, supporting data) | |
| | Conformity of the product (8), supporting values, etc. | Conformity yes/no values: |
| | Evidence to (8) (certificate, supporting data) | |

3) Conformity to "water-saving equipment" requirements 4-2

| | | |
|--|-------------------|---------|
| Conformity of the product (1), supporting values, etc. | Conformity yes/no | values: |
| Evidence to (1) (certificate, supporting data) | | |

New Rule of Phrasing under Eco Mark

Eco Mark is indicated with a logo combined with phrasing.

The logo is available in print.

In environmental information is expressed in two lines or more under the logo mark, follow the instruction below by selecting a type from the specified ones.

1. Font of characters over and under the logo mark

The font should be "Knurl D" by Shaken. Where "Knurl D" cannot be used, one of the following fonts should be used over or under the Eco Mark:

- "Jun 34" by Morisawa
- "Sular Plus" by Font Works
- "DFP Round Gothic" by Dina Font

2. Relations between the size of the logo mark and the font size under the logo mark

Characters in the letter frame should be:

where D is the diameter (mm) of the logo mark circle

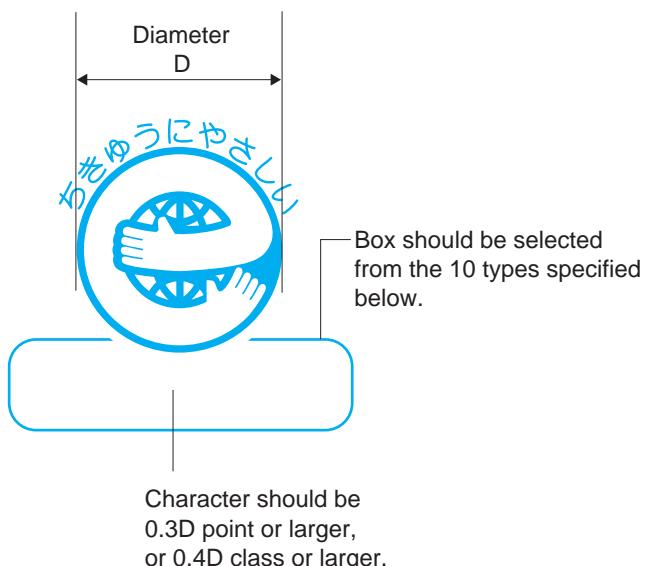
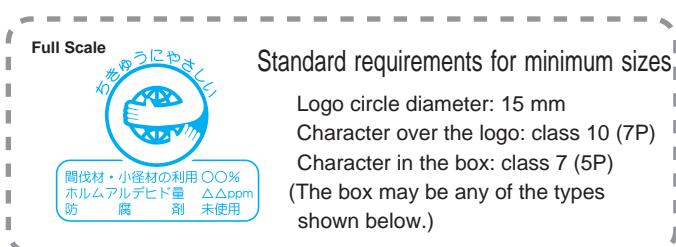
- 0.3D or larger in point
- 0.4D or larger in class

Figures may be rounded off to the decimal place.

Minimum sizes should be, in principle, as follows.

Note: Standard line-to-line space should be

point-number/class-number x 1.2



3. Relation between the number of characters under the logo mark and the letter box

1. Select one of the 10 types of combination of the logo mark and letter frame shown below, depending on the number of characters.
2. Lay out the characters in the frame with equal upper and lower spaces, and left and right spaces.
3. The description in the frame should follow the applicable criteria for Eco Mark certification.
4. Where the description of environmental information becomes 4 lines or more, extend the height of the letter frame with a fixed width and corner radius.

Where the description is in two lines



Type 1



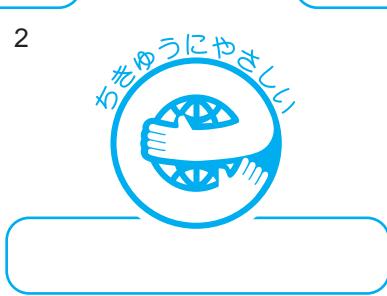
Type 2



Type 3



Type 4



Type 5

Where the description is in three lines



Type 6



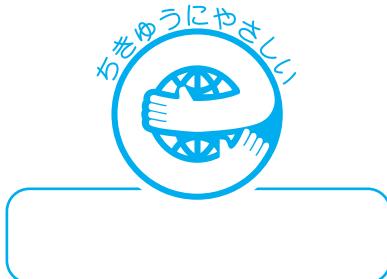
Type 7



Type 8



Type 9



Type 10

Examples



Using Type 2



Using Type 10

4. Exceptions

Where the size of the logo mark exceeds 40 mm in diameter (D), the size of characters may be smaller than the specified one. In such a case, characters in three lines may be contained in a box designed for two lines.

The height of box may be smaller than the specified one in order to reduce the space between lines.



Description with 10-point characters is allowable
although normal font size is 40×0.3 point = 12 point.



Box for two lines (Type 2) containing 10-point characters may be used.